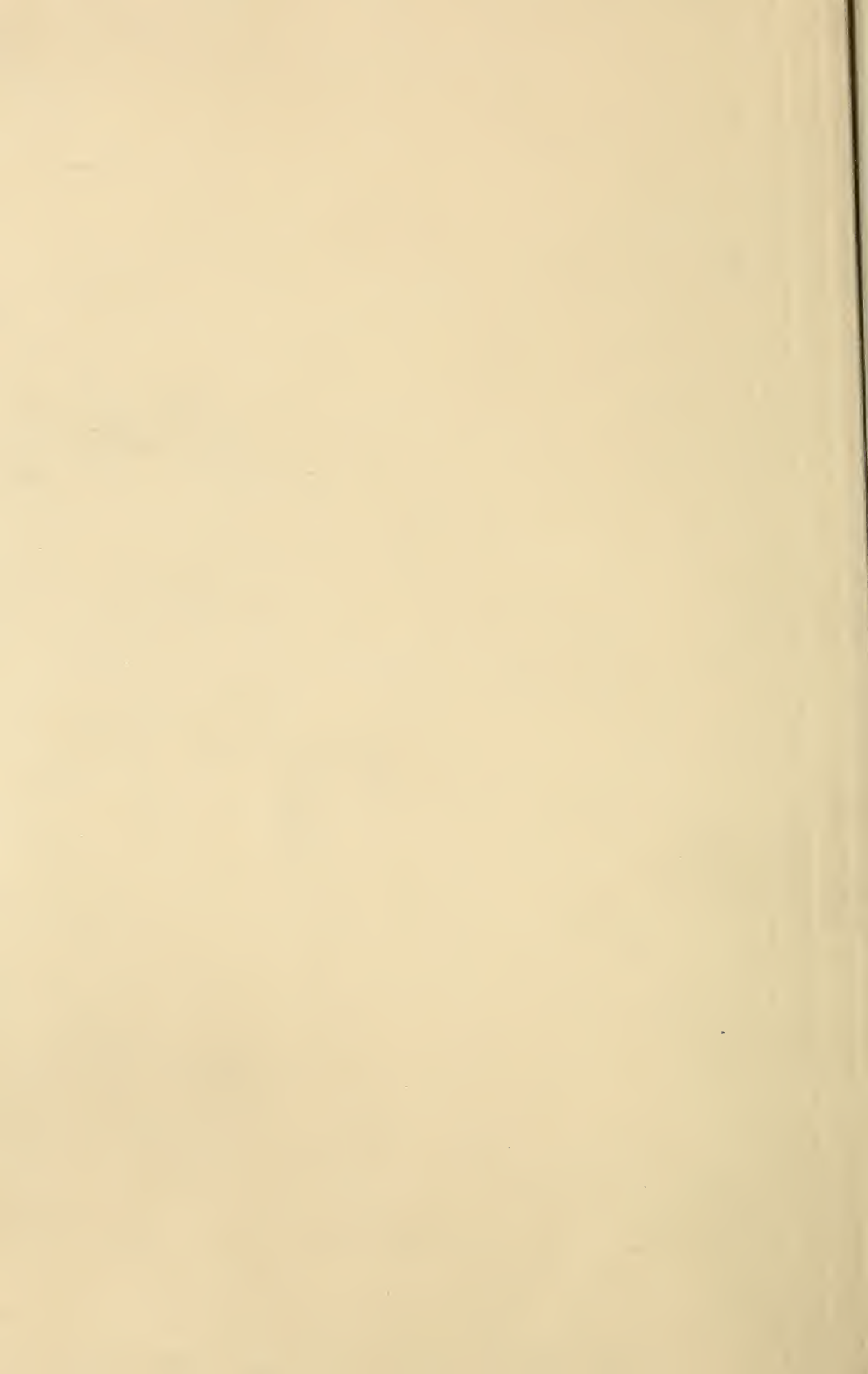
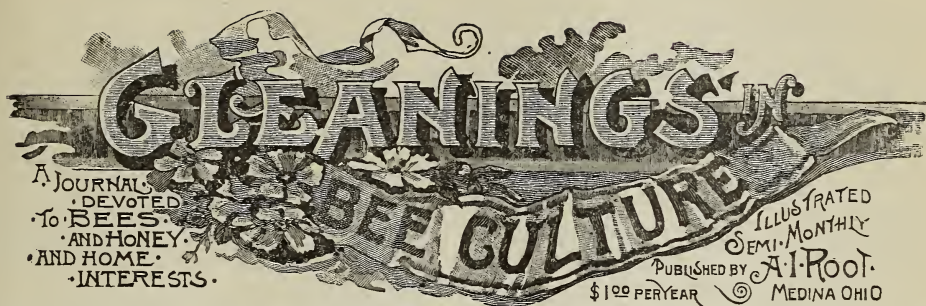


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Vol. XXI.

SEPT. 15, 1893.

No. 18.

STRAY STRAWS

FROM DR. C. C. MILLER.

ARE YOU GOING to Chicago October 11?

A YOUNG BEE sheds its skin about half a dozen times while in the larval state.

SAY, DOOLITTLE, the wire cloth I use to kill bees has three meshes to the inch; and when one of its wires hits a bee it hurts.

A REMEDY FOR ANTS is given in *Revue*. It consists of pulverized crude naphthaline scattered in the places frequented by the ants.

CROSSNESS, especially late in the season, is given as the leading characteristic of Punic, in Bulletin No. 30, Department of Agriculture.

DRONES from unfertilized queens, and even those from laying workers raised in worker-cells, Cheshire thinks, are just as good as any.

A FLYING BEE is supposed to vibrate its wings from 200 to 400 times in a second—say 20,000 times in a minute. Lively work, isn't it?

POLLEN is used by the French as a ferment for hydromel. Why doesn't some enterprising Yankee start the manufacture of yeast from pollen?

A WOMAN sometimes thinks she isn't in very big business when she's busy at housekeeping. But the rest of the family don't think it's very little business if she drops out of it for a while.

A QUEEN has about 5000 eyes; a worker from that to 6000, and a drone twice as many as a worker. I'm glad I'm not a bee, for with only two eyes I can see much that ought to be done.

A QUEEN'S BRAIN is not so large as that of a worker, and Cheshire thinks a queen doesn't know as much as a worker. The queen lays eggs, and the workers run all the other business of the hive.

PEOPLE are more inclined to get fat as they grow older. Not so with bees. A perfect bee weighs little more than half as much as it did when, in the grub state, it commenced spinning its cocoon.

REVERSING FRAMES has been little mentioned of late. In reply to a question about it in *A. B. J.*, only three out of twenty-five think it of any use beyond getting frames filled with comb to the bottom-bar.

ARE BEES very regular about the time of sealing up queen-cells? It seems to me that I have sometimes, when destroying queen-cells, found them containing grubs much too small to be of the regulation age.

"JUST AS SOON as it is warm enough in the spring for bees to fly," says Hutchinson, in *A. B. J.*, "I would remove them from the cellar." You wouldn't keep that up many years, W. Z., if you lived at Marengo.

DRONES are said to be free commoners. I never had much proof of it till this year. I have two colonies of half-blood Punic, the drones being pure, and those ebony-black gentlemen are scattered all over the apiary.

PULLED QUEENS, according to H. F. Coleman, in *A. B. J.*, should not be handled, the end of the cell being opened and the queen allowed to run down of her own accord. I handle mine; but the other way might be safer.

PUNICS are just like blacks in their readiness to run and fall off the combs, but exactly the reverse of blacks in their way of finishing up combs, the blacks making very white combs and Punic the greasiest-looking of all.

"BY FEEDING each colony seven or eight pounds of sugar syrup at the end of the season, it will be stored in the center of the hive, and it will be largely this food that the bees will consume during their confinement."—*Hutchinson*, in *A. B. J.*

A NOVEL PLAN for stopping robbing is given by M. D. Andes, in *A. B. J.* He "removed the queens from the hives that were robbing, and in 30 minutes the robbing ceased." After being queenless 48 hours they had their queen returned, and all was lovely.

BROOD IN SECTIONS never troubles me much, although there is nothing to hinder queens going up into supers if they want to. This year, however, I have not seen brood in a single section. Is it because the honey-flow was unusually heavy this year?

GALLUP, the old original Gallup, says, in *A. B. J.*, that it is so common for stray swarms to take possession of vacant chimneys, etc., in California, that "in letting a contract for a house it is now customary to insert in the contract that it must be bee-proof."

THAT BAD SMELL that I complained of, coming in the hives this year directly after clover harvest, M. B. Bergey thinks is a disease. A few of his colonies have it yearly, the bees dying in droves. I doubt whether mine is the same. I think no bees die in my case. Is his a new disease?

WINTERING IN RUSSIA, whether it be from harder bees or a moister climate, or what not, in spite of the severe cold, seems more successful than here. Mme. Levaschof reports in *Revue*, that, out of 40 colonies, she lost only one, and that by her own fault—this with five months of

10 to 35 degrees below zero, and no flight. Colonies in open air wintered best, those suffering most being strong colonies packed too warm.

FRIEND ROOT, between you and Hasty and Doolittle you're getting the rule for cutting queen-cells twisted into pretty bad shape. Doolittle's old rule, 5 days after swarming, and again 5 days later, worked well with me; but you'll miss cells, no matter what the number of days.

THE QUALITY of honey in this country this year, so far as reported, seems unusually fine. On the contrary, in the region of *Revue Internationale*, Switzerland and France, the quality is unusually bad, honey-dew being abundant, and darkening all honey. Nearly all kinds of trees seem to afford the troublesome stuff.

I AM ASKED to tell how I came out with those big bees from Florida. Unfortunately I lost the queen by swarming before I could test them on red clover, but I had a chance to find whether they built larger cells than other bees. They built them larger than five to the inch, but I found other bees did the same.

STARTING QUEEN-CELLS is not always a sign of queenlessness when a frame of brood is given to a nucleus. Often, if not generally, if a frame of brood is given just after a young queen is hatched, the bees will start cells, only to tear them down a little later. Perhaps they want them as security in case the young queen is lost.

A TOOL that will easily and quickly start the dummy when lifting it out of a Dovetail hive is one of the things that I should like. Who has the best? and what is it like? I think the worst thing about the Dovetail hive with fixed frames is the trouble of getting out the dummy. That's as much as to say there isn't anything very bad about the Dovetails.

A LARGER BATCH OF STATISTICS.

E. E. HASTY COMPLETELY DISPROVES ALL THE OLD-TIME RULES.

I didn't feel satisfied with so slender a show of statistics as I made out of this year's second swarms, on page 664. With so few as 22 swarms, the chapter of accidents has almost as much to do with results as general principles have. I did not relish the big job of collating my whole 14 years of records; but the upshot of it was, that I went and did just that. I found record of the time of 299 second swarms—a number large enough to pretty well swamp the accidental elements of the calculation. So the figures given below represent "bed rock" so far as this apiary is concerned. As I intimated before, I think similar records from other apiaries where "swarm fever" is unknown are likely to vary widely from these. And yet (the world is so full of misconceptions) I feel a little shaky, even about that conclusion. I think we are entitled to know in this "end of the age" whether Langstroth's declaration, that the second swarm usually comes nine days after the first, is "a mile off" from the truth or not. Those words, strictly construed, would imply that more than half the number of seconds fell on the ninth day. With me, as you see, it is only one-sixth. The figures given before seemed to indicate that eight-day swarms were much more numerous than nine-day swarms. This is simply one of the errors resulting from not having a sufficient number of swarms under consideration, and the aggregated record reverses it. Both eight-day swarms and nine-day swarms are a little inclined to come in

"rafts." Here are the figures for 300 swarms, lacking one.

At 6 days.....	3	At 12 days.....	39
At 7 days.....	6	At 13 days.....	34
At 8 days.....	32	At 14 days.....	24
At 9 days.....	48	At 15 days.....	6
At 10 days.....	46	At 16 days.....	9
At 11 days.....	48	At 17 days.....	4

Just look at this table, and think of the absurdity of saying that the second swarm is "sure to come out the eighth day," or "sure to come out the ninth day"! Granting these figures, swarming reaches a maximum the ninth day and continues unchanged three days, the slight decline of two the tenth day being evidently accidental.

To show how easily one's *impressions* may get wrong, I remark that, before collating these records, I thought that twelve days was my maximum. The fact is, that there is a plain though not very heavy falling-off the twelfth day. As ninth, tenth, and eleventh days are alike, so there are three other days quite nearly alike—the eighth, the twelfth, and the thirteenth—the twelfth slightly preponderating. Then there is a considerable fall, and the fourteenth day has just half the maximum number. Also the three concluding days, during which swarms are occurrent, but rare, differ but little.

As to the few six-day and seven-day swarms, probably some of them, and perhaps nearly all, are not really normal second swarms. When the superseding of a queen and swarming come on together, the second swarm is usually timed to the first as normal *thirds* are to normal seconds; but I see no reason why occasional ones might not come out six or seven days after. So, to be worth anything, records of seconds at six and seven days must be verified by looking at the prime to see if it really had a fertile queen at hiving time. This I do not remember of doing in either one of the tabulated instances.

Concerning your practical inquiry about better time rules for cutting cells, I'm afraid that is rather hopeless. Some of us will be content to give up altogether the job of cutting cells to prevent swarming; but cutting ripe cells when we want them to use is also one of our needs; and it is quite vexatious to go to a hive that we think ought to have ripe cells, and find nothing but very green ones; and waiting until the cells are sure to be ripe, and having them all destroyed, isn't very funny either. And we do not all feel "solid" as to whether a cell is ripe or green from the looks on the outside. The prevalence of eight-day swarms brings in a difficulty about destroying cells the eighth day which should not be overlooked. If the bees have made their minds up during the night and early morn to swarm, I do not think the destruction of the cells will change that resolution at once. I should expect them to swarm just the same, and leave the old stand with no queen, and no means of rearing any.

E. E. HASTY.

Richards, Lucas Co., Ohio, Sept. 7.

WHAT SHOULD THE GOVERNMENT DO FOR APUICULTURE?

WHAT IT HAS DONE FOR OTHER INDUSTRIES.

In order to find what the government should do for apiculture we must see what its relative importance is to other industries, and what it has done for them; then we are in a position to see what aid it would be reasonable to expect and to what it should be applied.

Some years since, the government created a

Bureau of Animal Industry. Through this bureau they have investigated the diseases of animals, their cause and prevention. This has employed some of the best talent in our land. It has cost very large sums of money, and has accomplished much good. The investigation into the cause and prevention of "Texas Fever," alone, has been worth to the country many times the cost of the whole investigation.

This bureau has given the country a large and well-written book on the horse and his diseases; on cattle and their diseases, and a special report of the sheep industry of the United States, of an even thousand pages; also a book on the animal parasites of sheep. No more valuable books than these can be in the hands of those interested in these several branches of animal industry. But so far the general government has done nothing for the bee-keepers. There are in the United States about 45 million sheep. These have received attention from the government in proportion to their importance as an industry.

There are no reliable data by which we can determine the number of colonies of bees in the United States. There can be no doubt, however, that there is from one-third to one-half as many colonies of bees as there are number of sheep; and a colony of bees will average as much income as a sheep; therefore the bee-industry in the United States should have one-third as much attention from the government as the sheep-industry. Should it receive one-third the amount of aid that has been given to the sheep-raisers, and the money be judiciously used, it would solve many problems that are now mysteries. It costs the bee-keepers of America thousands of dollars each year trying hives, fixtures, and experiments, which they abandon as useless long before they are worn out.

How much money have the bee-keepers of America paid for Simplicity hives? How many of them are now in satisfactory use? Who can tell the thousands of dollars sealed covers have cost the American apiarist? What has been the cost to the country of swarm-catchers, self-hivers, and non-swarmer attachments, and other similar devices? and how many of them fill the bill?

While all these things are a step upward, and in this respect are to be encouraged, yet they should be tested more thoroughly before they are given to the people in such a wholesale manner. To test such things we need an experiment station, with an appropriation of \$15,000 per year, the same as is now given by the government to the several State experiment stations. This would suffice to have one general station, and have parties in several parts of the country to try experiments in their parts. If such work were properly conducted it would be very valuable. Besides investigating things of a practical nature, such a station could investigate things of a scientific nature on which apiarists are not now agreed.

We should like to know how many pounds of honey an average colony consumes during a year. How many pounds of honey does it take to make a pound of beeswax? Do bees ever remove eggs from one cell to another to raise queens? Do worker bees, in order to become "laying workers," mate with drones? Will the drones from laying workers fertilize queens? Will the drones from unmated queens fertilize queens? Would a strain of bees inbred, beyond the range of any other bees, degenerate? Besides these we want to know how much foundation it pays to use, both in brood-chamber and in sections; just how much more extracted than comb honey (if any) bees will make. In fact, the things we do know are very

few; and the things we do *not* know are innumerable.

Some may say, "Why, I have conducted some of the experiments mentioned, and have settled them beyond a doubt." Friend, you are too fast; you have gone off at "half-cock." The number of experiments thoroughly demonstrated is very small. When a man makes a discovery, or thinks he does, the first thing he does is to write to his favorite bee-journal, announcing his discovery (?) in the most glowing terms, calling upon the whole world to "see our light;" when the fact is, in nine cases out of ten, there is no light. It's peculiar how each leader in apiculture makes all his efforts tend to demonstrate some pet idea. If he believes a certain kind of hive is the best, all his efforts and experiments tend to show that it is. If a certain strain of bees meets his fancy, all his experiments seem to confirm his belief; but such seems to be the tendency of life. If a government station were established, much of its efficiency would depend upon the apiarist in charge. If he were a man of hobbies, its usefulness would be limited; if open to conviction much good would result. We are fortunate in having in America just the man to conduct such a station—one in whom we all have implicit confidence—a man with but one hobby; that is, he believes the pure Carniolan bee is as good a race as can be found; and although I breed and advocate another race, I do not know but he is correct. I refer to Mr. Frank Benton, of Washington, D. C., one whom I believe we should all be pleased to see placed at the head of an experiment station, if such a thing were to be established by our government.

Atlantic, Iowa, Aug. 28. W. C. FRAZIER.

GIVING QUEENS TO COLONIES IMMEDIATELY AFTER SWARMING.

G. M. DOOLITTLE STATES HIS OBJECTIONS.

I am asked to give an article in GLEANINGS on the plan of giving each colony a laying queen immediately after swarming, as is recommended by some, and also telling whether I consider the plan a good one or not. As I do not consider the plan a good one, I will try to give my reasons for so thinking.

For years we have been told that no colony should go without a laying queen for a single day, if it were possible to give it one; and plans for introducing queens which required that the hive should be queenless a week or so previous have been severely criticised. We have also been told that the bee-keeper who wishes to secure the best results from his bees should have a laying queen ready to give to each colony as soon as it swarms, as the time lost to the old colony in rearing a queen is equivalent to a swarm of bees. Being eager to know for myself all of the plans which would give the best results, I have experimented largely along these lines; and the truth of the statement, that the time lost to the bees in rearing a queen in natural swarming is equivalent to a swarm of bees, is the first reason that the plan has not been a success with me. If it were bees that I were after, the case would be different. With us the white clover yields only enough to keep the bees breeding nicely, and prepares them so that they swarm mainly from June 20th to July 1st. Our honey-harvest is principally from basswood, which blooms from July 5th to 16th. Now, all who are familiar with natural swarming know that the bees are comparatively few in spring, and increase by the rapidly increasing brood produced by the queen, which in due time hatch into bees, until a swarm is the re-

sult. By giving a laying queen to a colony immediately after it has cast a swarm, we bring about the same result (natural swarming) as before, or we place the bees in the same condition. The only difference is, that, having plenty of brood, they build up quicker and are prepared to swarm in a shorter time. As this second swarming, brought about by giving the laying queen, comes right in our basswood-honey harvest, it cuts off the surplus honey; for it is well known that bees having the swarming fever do little or no work in the section boxes; and if allowed to swarm, the object we have sought (section honey) is largely beyond our reach.

Having given my experience on this point, let us see how the same colony would work had we not given the bees a laying queen.

Eight days after the swarm issued, the first young queen would have emerged from her cell, as a rule, when the apiarist should remove all the other queen-cells from the hive, so that second swarming is entirely prevented. In ten days more our young queen is ready to lay, which is about the time basswood begins to yield honey largely. During this period, between the time the swarm issued and when the young queen commences to lay, the bees, not having any bees to nurse for the last half of the time, consume but little honey; hence, as fast as the young bees emerge from the cells they are filled with honey; for bees not having a queen nor any unsealed brood seldom build any comb in the sections. Thus, when the young queen is ready to lay she finds every available cell stored with honey. At this point the instinct of the bees teaches them that they must have brood or else they will soon cease to exist as a colony, and a general rush is made for the sections. The honey from below is carried above, so as to give the queen room, and in a week we have, as a result, the sections nearly filled with honey, as this honey carried from below, together with that from the fields, now gathered with renewed vigor, rushes things along wonderfully. I have had such colonies fill and complete section honey to the amount of sixty pounds in from ten to twelve days, while those to which I had given a laying queen immediately after swarming did little else than swarm during the same time. Different locations may give different results; still, I think nearly all locations give a large flow of honey at a certain period during the season, rather than a steady, continuous honey-harvest the whole summer. To such sections these remarks are applicable.

My second reason is, that, after basswood, we have a honey-dearth, hence the bees from the introduced queen are of no real value, but, on the contrary, become consumers. On an average it takes 37 days from the time the eggs are laid till the bee goes to the field to labor; hence the eggs for the honey-gathering bees must be deposited in the cells that length of time before the honey-harvest ends, or else they are of no value as honey-producers. As the basswood is all gone before the eggs of the introduced queen become honey-producing bees, and as the larger part of them die of old age before buckwheat and fall flowers yield honey, it will be seen that a great gain is made by letting each old colony having cast a swarm rear its own queen; for thereby we save the expensive feeding of the larvæ, which are to become expensive consumers of the honey of the hive. The chances also are, that, where the colony rears its own queen, it will be better stocked with younger bees for wintering in November than where a queen was introduced immediately after swarming.

The one point worth knowing above all others in bee-keeping is a thorough knowledge of

the location we are in, as to its honey resources, and then secure the largest amount of bees possible at that time or those times to gather the honey, having just as few at all other times as is consistent with the accomplishment of this object. In working so that we have the bees out of season, we have to pay the same price for them that we should to secure them so that each one becomes a producer instead of a consumer.

If all who read this article will study their locality, and then rear the bees in reference to that location, I think they will find that their bees will do as well as those of their more successful neighbors. We often hear it said, that one colony in an apiary did much better than the rest; and, had they all done as well, a large crop of honey would have been the result. The reason that one colony did so well was because it happened to have a large proportion of its bees of the right age to gather honey just in the honey-harvest; and if we can get all in this condition we can secure a like result from the whole apiary.

G. M. DOOLITTLE.

Borodino, N. Y., Sept. 5.

A GLIMPSE OF A WISCONSIN APIARY.

OUR OLD FRIEND F. L. SNYDER, AND SOMETHING ABOUT THE HONEY CROP, THE FAMILY, ETC.

Friend Root:—Do you remember that, just four years ago to-day, you left our home for Mr. Pickard's, Freeborn's, and Hatch's? It seems many years to me since then; and as I read in GLEANINGS about your travels, I thank God that he gives you health and strength that you may go and see, and tell us of the wonders there are to be seen. I have not so much honey now as then, but my garden is much nicer. My Early Sunrise and Potentate potatoes are wonderful, while the Freeman and Polaris are trying to outdo each other.

While I am talking with you in regard to my garden I will send you a picture of a part of our bee-yard and home, just as it looked two weeks ago.

Last year was a total failure here, except, while many of the best bee-keepers had to feed sugar, mine had enough honey to winter on; and this year we are working them "for all there is in them." We have had the worst spring dwindling in 1893 we ever had. We lost fully half, hence not so much honey as in other years. We do not use queen-excluding honey-boards, so you see the boys are after the queens in the top-boxes. Charley, on the right, is now 14 years old. All he knows in bee-keeping is what he learned in our yard, and by reading GLEANINGS and the A.B.C.; yet I think he is able to take care of and make it a success with a thousand colonies, if he had men to do the lifting. You see, he has his bee-hat in his hand. He will work but very little without it, and he will use no smoker but the Bingham. He does not like the bees, and they do not like him; but he will not be driven out of the yard. Then he has his smoker, but he declares he will never have a bee on his place when he gets to be a man.

Right in front is Grover C., 9 years old. His hands are not strong enough to blow a Bingham, so he takes the Clark. He thinks the Clark is better, for it does not make the bees so hot when the smoke hits them. He is, perhaps, the most restless boy in the bee-yard, living. More than half of his time he is without hat or stockings or shoes on. He has been working with the bees about four years himself; and he and his brother Ernest, two years younger,



APIARY, RESIDENCE, AND FAMILY OF F. L. SNYDER, OHION, WIS.

have bees of their own, and they must have the best of care in the spring when brought out of the cellar. By the picture you will notice Grover has forgotten himself, and is taking a sly look at the strange lady taking the picture. It was taken about 11 o'clock. The bees were flying strongly, yet you can see by his looks he does not care for them. Just back of him is Helena. She has worked with bees ever since we have had bees, till within the last two or three years, when she had enough to do to help her grandma take care of the rest of us. She will keep bees when she gets a home of her own.

That other lady is the *new* queen in the "Snyder hive." I brought her home last winter. I can not name her race, for in size she resembles the little brown or German bee; in color and disposition, the Italian; and when any one tries to drive her she shows the Cyprian. In a moment of energy you would call her perhaps a hybrid—a rather mixed-up mess; but she was not imported; she is *full American*; and should we ever be so lucky as to have you come to this part of Wisconsin and our place, you can get a good glass of lemonade, and she will be happy to see you; and I know she and grandma will do their best to make it pleasant for you or any one else from the Home of the Honey-bee.

Those four in the background just happened to be here. Ernest R. and his grandma are in Minnesota this summer. At the left, and back of Charley, is your humble servant—

Orion, Wis., July, 1893.

F. L. SNYDER.

[Those who have GLEANINGS for 1889 will find, by looking on page 680, that I greatly enjoyed myself once on a time when I found this pretty home on the banks of the beautiful Wisconsin River. We had beautiful soft water and just the nicest lemonade; and before retiring at night friend S. gave me the big arm-chair and the old family Bible; and while we were having a little visit that I shall always remember, he told me he had learned through GLEANINGS to make that Bible his friend and counselor, and his hope, even when grim death laid its hand on one of that little household. I remember the vine-covered porch to the honey-house, and the stairs that led to the little room above. I remember, too, the fruit and the flowers, and the pretty garden. The memory of that visit makes me long to repeat it. May God ever bless and watch over your little flock, friend S.; and may he give wisdom and understanding, both to you and the "*new* queen" as you together lead them all in the way of eternal life.—A. I. R.]

WILL TWO QUEENS FIGHT?

INTERESTING FACTS FROM OBSERVATION.

I wish you would say to that jolly old fellow and fun-maker, Dr. Miller, that we Southerners had thought he was a real practical apiarist until we saw in *Stray Straws* where he said, "I never saw two laying queens show fight—did you?" Why, bless the doctor's heart! If he had put it, "I never saw them fail to show fight—did you?" then we should have had the same high opinion of him that we have always had on any thing pertaining to the bee-business. His queens haven't got the grit ours have here in the South, or else he has not tried the experiment often of caging two laying queens together. I have tried it often, and *never* failed to see them show fight, and that to the death of one of them.

DO VIRGIN QUEENS MEET THE DRONE MORE THAN ONCE BEFORE COMMENCING TO LAY?

I say she does, for I have witnessed it the third time this summer; that is, I have seen three different queens this spring and summer return to the hives showing signs of having met the drone the second time. The circumstances were these: I was sitting by a hive one afternoon, that I knew contained a virgin queen. I saw the queen come out and make the third trip that afternoon. The last time she was gone quite awhile, but returned, showing all signs of having met the drone. As I was in need of some queens (that I had promised a friend), I kept close watch of this queen, looking into the hive every few days for about a week, to see if she was laying; but all to no purpose, when at last one day I opened it and found she was gone. I then closed it, and went and got a queen-cell, and was about to put it into the hive, when, to my surprise, I saw the same queen come in at the entrance, showing all signs of having met the drone the second time. I have also seen the same thing twice since that, as above stated. Who says I am wrong? It's the case with all of our domestic animals; why not with the queen-bees?

I witnessed a queen laying in a queen-cell. I believe it is claimed by some that a queen never deposits the egg in a cell from which a rival queen is to be reared; but I had always doubted such being the case, and now I know they do at least deposit eggs in them sometimes, for I have just witnessed the sight. I have a hive in my yard, the queen of which has been showing signs of failure for some time. I have just had the hive open; and, while holding a frame in my hands, I saw the queen depositing eggs in drone comb right close to a queen-cell. I watched her for a few moments, and she crawled up to the queen-cup, and peeped in (as she always does before depositing eggs in any cell), and curved herself up and deposited an egg with as much unconcern as she did in any of the drone comb.

THE HONEY CROP A FAILURE FOR THREE YEARS.

The honey crop has been a failure here for three years. It doesn't stop at the honey crop being a failure this year, but crops of all kinds are a failure this year—that is, in this part of the State.

L. B. SMITH.

Lometa, Texas, July 30.

[Dr. Miller replies:]

I am sorry to lose the good opinion of Bro. Smith, but I suppose it's better to tell the truth, even if I lose caste with the whole Smith family; and the plain truth is, I never saw two laying queens fight. It is true, I never saw them put to the test in a great number of cases, but I have known a number of cases where they got along peaceably together.

I am well aware that some stoutly insist that, whenever two queens get together, there's bound to be a funeral, but I can hardly understand how they can insist there are no exceptions to the rule in face of the considerable number of those who have reported finding two queens in a hive. Only lately there was reported in GLEANINGS a case in which two queens were dwelling together in a sisterly manner, and that right in the sanctum of GLEANINGS. What object would there or could there be in such cases for false reports?

From the fact that Bro. Smith has seen so many cases in which laying queens fought, I suppose my experience in the matter is somewhat exceptional, but that doesn't alter the truth. At the present time I have no less than three colonies with two queens in each, or, at

least, they were there the last time I visited them, only a few days ago. In one case both queens are laying, and in the other two the younger queens have not yet commenced to lay. I doubt whether two queens often continue together very long in one hive, the older one being about played out, I think.

I think there is a tendency to pin our faith a little too closely to established tradition in a good many cases, and there is also too great a tendency to settle rules upon too limited an experience. Not very long ago I raised the question whether laying workers were ever present before all brood had disappeared. I was promptly answered that laying workers often commenced their work while brood is present, and since then I have had more than one case of the kind, in some cases a young queen being either present or on the way. I once saw a queen sting to death a worker, and reported it. It was a somewhat dangerous thing to do, for my veracity was called in question, simply because the one who disputed it had never seen any thing of the kind himself.

Now, at the risk of being called an idiot and a liar, I'm going to say that, in a number of cases, I have seen two virgin queens together for some time before there was any fight, although the queens could not but be aware of each other's presence, as they touched more than once. On the other hand, I have seen two virgins fight to the death not a minute after emerging from the cell.

There are exceptions to all rules generally, and sometimes the exceptions are so many that it is hard to say which is exception and which is rule. C. C. M.

[Referring to the matter of a virgin queen being fertilized more than once before laying, we would say the facts observed by our correspondent are rather new. Has any one else observed the same? We have always taught, and have been taught, that once meeting the drone sufficed.]

TAYLOR'S NON-SWARMING PLAN.

WHY THE LANGDON PLAN WON'T WORK.

Friend Root:—The fact that I am and have been experimenting on a non-swarming hive or system of manipulation to effect that purpose, is generally known to the readers of the bee-journals. I see that the Langdon device has failed to come to time, the results and reports of R. L. Taylor and Mr. Secor settling that fact. The editor of the *Bee keepers' Review* knows that I have never had any hope of the Langdon plan succeeding, there being more than one reason for expecting failure, to one who had already practically explored the ground occupied by both Langdon and Aiken.

My experiments this year have not darkened the hope of yet perfecting a practical plan whereby swarming can be controlled, even if we could not get quite so much honey. A plan that would enable us to escape that constant watching through the whole working season that is now a necessity, and enable us to keep either a home yard or out-yards by visiting them and giving a little attention once a week, would be a great boon. This much I will assure the bee-keepers: I will not offer any thing, either for sale or even trial, until I have something certain to offer. The plan I am now working on is radically different from the Langdon plan. There is a similarity in some respects; but the radical difference is, that the plan of Mr. L. contemplates two hives and two entirely distinct families, with entirely separate entrances; while my plan is one hive with

practically but one family, all the bees using one common alighting-board and entrance, but with two queens, these queens to be kept separated by a wire-cloth partition through the center of the hive. This partition, however, serves other purposes than keeping the queens apart, as it is entirely necessary in order to manipulate the bees as desired. The possibility of working a single colony of worker bees with two queens in a single hive divided by a gauze partition is no longer an experiment. I now state here the fact that I am working such colonies with entire success, the whole colony of workers using either side of the hive, and accepting either queen, without the least disturbance. This is what I claim as my discovery, and I shall keep myself protected legally in its use, so that, if it ever proves successful in serving a useful purpose, there will be no question of priority to dispute about.

The bees I used in the new hives this season were blacks; and to determine whether the bees did fully fraternize I removed one black queen from each of two hives early in the season, and replaced them with pure Italians. Thus there was a black queen in one side of each hive, and an Italian in the other. The point aimed at was to see whether the Italian bees, after they hatched out, would all remain in their own side of the hive with their mother, or would accept the whole hive and both queens as their home. After several examinations I found, to my great joy, that the yellow Italians were equally distributed in both apartments, and were indiscriminately intermixed throughout the hive.

I next tried removing both black queens and substituting Italians, to see whether the bees from the other side would regard them with disfavor; and, after releasing the new queens and waiting several days, I examined the hives and again was overjoyed to find my pet queens peacefully and quietly doing duty.

Now, friends, I have good reason to hope that I shall yet succeed in accomplishing my task of working out a successful non-swarming hive. I have had a higher motive in my nine years' work in this line than the making of money; and if I succeed I will never use it other than to benefit the bee-keeping fraternity.

I see that friend Secor smothered two of his best colonies in trying the Langdon machine. I should have expected this result where a full colony was given no greater means of exit than a passage large enough for only a single bee to pass out. In my own device there is no danger of smothering the bees, as the closed hive may have the entrance at the back opened the whole width of the hive if necessary. I have frequently noticed that, where bees from different hives get mixed together in natural swarming, they are quite prone to swarm out again after being hived. They seem to be in an excited and unnatural condition. Now, when two swarms are thrown together, as in Mr. Langdon's plan, the bees are entire strangers, and I think this accounts for their strong passion for swarming, as reported by R. L. Taylor. In my plan the bees are not strangers that are suddenly thrown together, but members of a common family, and they will be free from that excitement that would naturally follow from the home being suddenly crowded with strangers, and I believe I shall not fail from this cause. In Langdon's hive, every bee that leaves the closed hive had to go into the already overcrowded one. In my hive no bees go to the full hive. After those used to flying have left the closed hive, the young bees that have their first flight will fly from the back entrance and will return there. Friend Langdon tried to criticise this feature; but I regard

this as being the strong point in my hive, as these bees are just the needed nurses for the unsealed larvæ, and are absolutely needed to maintain a healthy condition, and enable the queen to continue her work. If I live and have the strength next year, I shall finish my work with non-swarmer; for if this fails I shall "throw up the sponge."

But whatever comes of the non-swarmer, the house-apiary is a complete success with me, and I greatly wish, friend Root, that you could be here and be convinced. I have boomed the house-apiary; I have nursed it as my choice pet; and now, after three seasons' trial, I declare that I made no mistake when I said that the house-apiary had come to stay, and that soon most good bee-keepers would keep their bees in that way.

B. TAYLOR.

Forestville, Minn., Aug. 19.

[So far the non-swarmer plans have not given us any great hope of success; but we are all the time willing to "grasp at a straw," with the hope that some time a plan or method may be discovered. We would recommend a careful reading of the article above, and we are sure that all the bee-brethren would be willing to accord to Mr. Taylor whatever originality in plan may belong to him.]

RAINFALL AND ITS DISTRIBUTION IN CALIFORNIA.

A LETTER FROM COREY, OF SMOKER FAME.

Mr. Root:—The district in which I am located is known as the Santa Clara Valley. The stream of the same name rises in the mountain above Acton, Los Angeles Co., and is called the Solidad Canyon for the upper 30 miles. Streams, both from north and south, flow into it; and from Saugus to the Pacific it is known as the "Santa Clara." Bees are distributed along this valley from its source to its mouth; and long canyons, most of which flow into it from the north, are well known to all Southern California bee-keepers, many of whom occasionally contribute to the columns of GLEANINGS.

The rainfall for the past season was very irregularly distributed over this district. The upper portion, where the downpour has generally been most liberal, was scant, in many localities the fall being less than 12 inches. The amount gradually increased toward the Pacific Ocean, until at Santa Paula our rainfall was over 30 inches.

The honey-flow appeared to be more uneven than the rainfall, the crop being quite light until a point about 12 miles above Saugus; and from that point west to the Piru the flow appeared more even and abundant than higher up and lower down the valley; still, some very fair crops were made outside the district described.

The generally accepted theory, that uniform warm weather is most favorable for a good honey-flow, has received a backset this season, as the weather was quite cool during all the 60 days of our flow; and so constant and even was the flow that bees would not pay any attention whatever to honey in any form; in fact, we paid no attention to the doors of our extracting-house, as bees were too busy to notice the doors.

In summing up, it would appear that less than 12 inches of rainfall diminishes the honey crop in this district; that 15 to 20 inches is more favorable for a good crop than 25 to 30 inches, and that uniform temperature is of more importance to bee-keepers than higher temperature, as, in most cases, very hot weather

is followed by cool weather, which cuts off the honey-flow.

The average per colony, over the higher portion of this district, where the rainfall was 12 inches or less, was not over 100 lbs. of extracted honey; in the central portion, about 200 lbs.; and in the lower, or coast district, 150 lbs. per colony, spring count.

The vexed question of new or second-hand cans and cases has nearly settled itself by the bulk shipments of oils and gasoline from the east, thus making gasoline and coal-oil cans scarce, and high in price, and more difficult to obtain in sufficient quantity. Heretofore the bee-keeper who bought second-hand cans and cases at from 25 to 50 cts., planed the cases and cleaned the cans, and packed his crop, had the advantage of from \$5.00 to \$8.00 per ton over his careful painstaking neighbor who paid 90 cts. each for his cases and cans. Dealers are helping to bring about this much-needed reform in style of putting up our honey for the market; and, in the language of the country, "soap-fat cans" are doomed.

Bee-keepers are gradually abandoning "gums and boxes," and are using better hives and frames. Better management in all departments connected with the apiary is being brought about by bee-keepers' meetings in which all the latest appliances are shown and their merits canvassed.

J. G. COREY.

Santa Paula, Cal., Sept. 1.

RAMBLE 92.

PULLED HONEY.

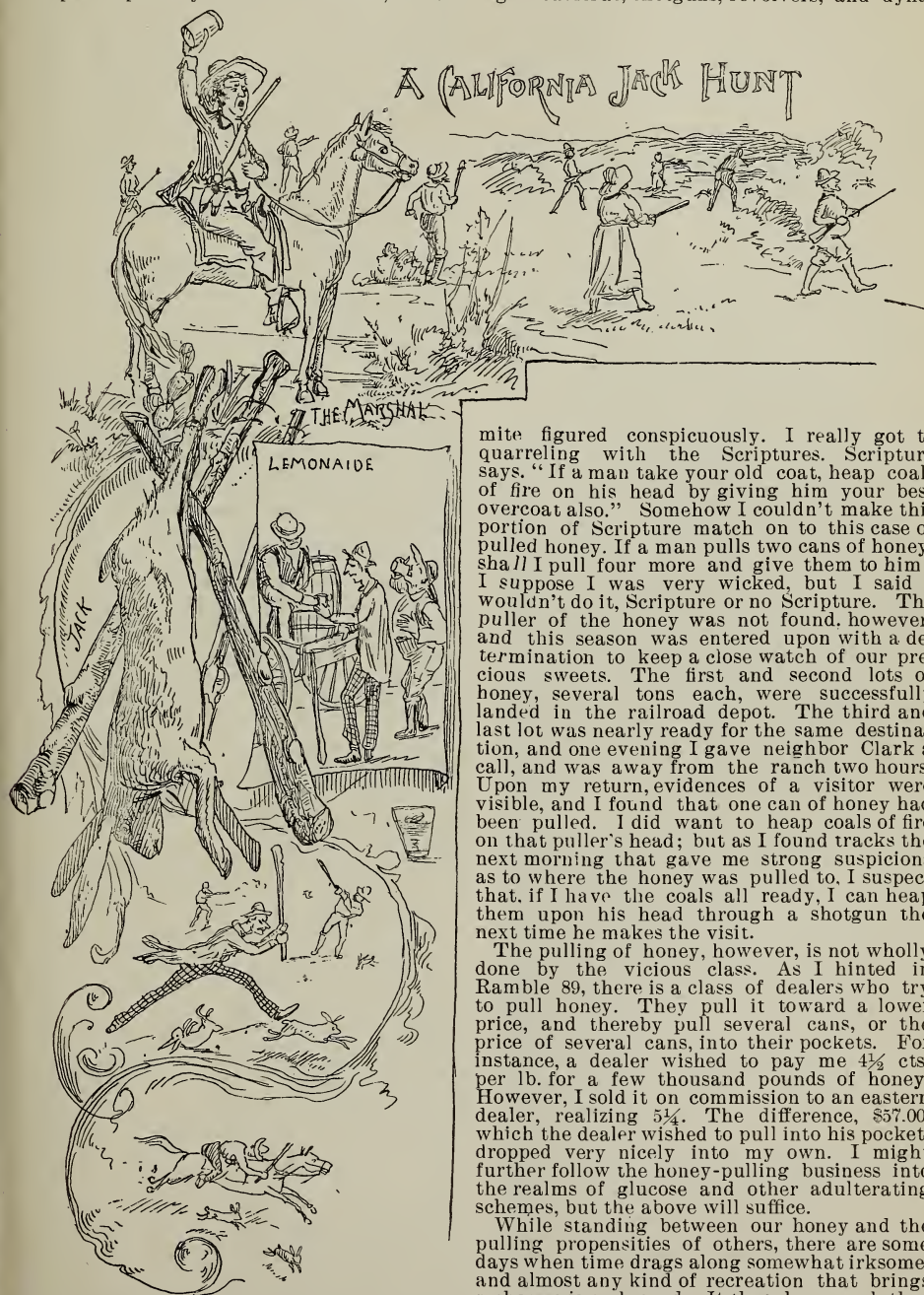
"Pulled queens" seems to be the topic in certain quarters lately, and it seemed to me that a few words in relation to pulled honey would not be amiss. This kind of honey is not particularly indigenous to California, any more than pulled queens are indigenous to Texas; for I have heard of it as being known in early times in the far East. For instance, my grandsire had a fine row of Weeks hives, suspended in the old-fashioned way upon two horizontal scantling. One night some persons pulled several boxes of honey from the surplus chamber, and kept pulling them until they were several miles away. Suspicious and constables followed the pullers; suspicious materialized into certainties, and the pullers were punished. But the pulling did not end there. A few nights after the unpleasantness had been settled, the same pullers, presumably, smarting under the infliction of justice, pulled one of the scantling that supported the hives, and the whole row was wrecked. Against this pull there seemed to be no remedy; and from those days of my grandsire the episode was handed down to us grandchildren, with the solemn admonition that pulled honey always had a demoralizing effect upon the puller—and a sort of reflex action upon the pullee. The admonition was good; and, having no children of my own to hand it down to, I wish to make the effect as widespread as possible, and therefore hand it to other bee-keepers' children. Children never pull honey.

After a two-years' sojourn in California, I find that honey-pullers are not confined to the ancient days, but they also grow here in this balmy clime.

When I first commenced rambling with our happy California bee-keepers, and saw their honey in great piles in remote places, I questioned them in relation to the amount of pulled honey, and was surprised to find that, in a majority of cases, it was none. It was, there-

fore, with happy thoughts that I commenced work in the apiary assigned to me, feeling sure that, whatever else might befall me, pulled honey would not be on the list. After the season was well advanced, and my cases of honey were piled up ready for the teamsters, I left it

had a genuine case of pulled honey. Two 60-lb. cans of my hard-earned honey had been pulled out of the cases and were missing. I had some very blood-thirsty thoughts for some time: passed several resolutions in which flashlight cameras, shotguns, revolvers, and dyna-



mite figured conspicuously. I really got to quarreling with the Scriptures. Scripture says, "If a man take your old coat, heap coals of fire on his head by giving him your best overcoat also." Somehow I couldn't make this portion of Scripture match on to this case of pulled honey. If a man pulls two cans of honey, shall I pull four more and give them to him? I suppose I was very wicked, but I said I wouldn't do it, Scripture or no Scripture. The puller of the honey was not found, however, and this season was entered upon with a determination to keep a close watch of our precious sweets. The first and second lots of honey, several tons each, were successfully landed in the railroad depot. The third and last lot was nearly ready for the same destination, and one evening I gave neighbor Clark a call, and was away from the ranch two hours. Upon my return, evidences of a visitor were visible, and I found that one can of honey had been pulled. I did want to heap coals of fire on that puller's head; but as I found tracks the next morning that gave me strong suspicions as to where the honey was pulled to, I suspect that, if I have the coals all ready, I can heap them upon his head through a shotgun the next time he makes the visit.

The pulling of honey, however, is not wholly done by the vicious class. As I hinted in Ramble 89, there is a class of dealers who try to pull honey. They pull it toward a lower price, and thereby pull several cans, or the price of several cans, into their pockets. For instance, a dealer wished to pay me $4\frac{1}{2}$ cts. per lb. for a few thousand pounds of honey. However, I sold it on commission to an eastern dealer, realizing $5\frac{1}{4}$. The difference, \$57.00, which the dealer wished to pull into his pocket, dropped very nicely into my own. I might further follow the honey-pulling business into the realms of glucose and other adulterating schemes, but the above will suffice.

While standing between our honey and the pulling propensities of others, there are some days when time drags along somewhat irksome, and almost any kind of recreation that brings a change is embraced. It thus happened that a great rabbit-drive came off near our apiary; and knowing that a few sketches from such an unusual field of action would interest the bee-keeper, I herewith present them with a few comments.

in that condition and spent Sunday in Riverside, attending church regularly, morning and evening; and after having indulged in good thoughts I went out to the apiary Monday morning, and, soon after arrival, found that I

Rabbit-driving is an institution peculiar to California. The long-eared jack-rabbit is very destructive to tender vegetables and to the bark of young fruit-trees which are so rapidly invading his domain. The coyote is a natural enemy of the rabbit; but a State bounty of \$5.00 on his scalp so decimated his ranks that the balance of numbers was thrown in favor of the rabbit family, and a consequent increase of vexation to the rancher. The pest is endured until every rancher receives more or less damage; then a grand rabbit-hunt is organized.

There are two methods employed to make a wholesale slaughter. Sometimes a corral is constructed with wide-expanding wings. The drive is carefully organized, and noise and clubs are the chief implements used. All of the rabbits from a mile area are concentrated into the corral and killed.

Another plan is to form a long line of men, armed with shotguns. As the line advances, the rabbits take alarm; and, leaping from their cover, attempt to run along in front of the line of shotguns; its life is soon cut short, if not by one shot then by half a dozen in rapid succession. The line on our rabbit-drive was nearly a mile in length, and was composed of a nondescript crowd of over 200 men, boys, and women. There was a cavalry contingent on the flanks, made up of Mexicans and boys, whooping in the rabbits and giving chase to those that were likely to escape. The front rank of the shotgun brigade was on foot; behind came several wagons loaded with women and children to see the fun; and still further in the rear were two big wagons with barrels of lemonade, for this is a very thirsty country. The whole force was under the direction of a grand marshal; and his orders to halt, to wheel and to march, were obeyed with the precision of a drilled army. A baking-powder can, with a few pebbles in it, was vigorously shaken by the marshal to attract attention; orders were then given in a stentorian voice, and also imparted to the outlying wings by several mounted subordinates, who went to their posts at a break-neck speed and a series of whoops. The rapid advance of the whole line, and the continuous bang of guns, made a novel and exciting picture.

The little army made Bloomington its objective point for dinner, and here the hungry crowd was bountifully fed. A rest, and then a final drive in the afternoon. This time the swing was made to within half a mile of the Rambler's apiary, and he dropped out and sought his cabin, where the watch over the honey was resumed. Over a thousand rabbits were shot that day, and the pest was that much abated. While our line was marching through the low bushes, two or three miles from any habitation, we came upon a bee-ranch that was just being established. The hives, cans, extractor, and cases were in a promiscuous condition, and the only residence was a bough house. The situation was decidedly picturesque.

Quite a number of bee-men were in the hunt, with their families. They did valiant service with the shotgun, for all bee-men are good marksmen, with, possibly, the exception of the RAMBLER.

The queen-cages and other things we ordered of you arrived all right, and are the nicest lot of goods we have ever bought. We did not expect you to send wire cloth for the large cages, nor did we expect the covers printed. In the future we shall know where to send for a choice lot of goods.

Decatur, Miss., July 25.

CLEVELAND BROS.

THOSE OLD BEE-BOOKS.

ANOTHER PEEP AT THE "GOOD OLD TIMES."

The second edition of Thomas Wildman's "Treatise on the Management of Bees" appeared in London in 1770—the year famous in American history for what is known as the Boston Massacre. The book in question is a well-printed octavo volume of 320 pages, large clear type. The old-fashioned long S is used, except at the end of words—something this fashion, fo! On the title-page some former owner has written "excellent," and also added side-notes all through the book. For instance, on page 33 the author says he has seen bees come home loaded with wax the same day they emerge from the cells. The commentator adds, "Mr. Wildman is certainly mistaken here."

Some very interesting information is to be found all through this volume. For instance, before the Europeans took possession of the West Indies, honey was very much more extensively used than then (130 years ago); but, on the other hand, luxury had greatly enhanced the price of wax, it being used for candles in all polite assemblies, but more particularly for wax candles in Roman churches. Our author says honey was raised mainly for the mead and wines made from it; but as the Mohammedans were forbidden the use of wine, "Africa affords the great supply of wax to the western parts of Europe as Asia and Greece do to the eastern." This is for the benefit of those who don't like to raise yeast.

In 1757 an ordinance was passed in Rouen, a city in the north of France, to encourage the cultivation of bees. A diminution of the capita tax was promised, proportioned to the number of hives kept each year. The weight of taxation suffered at that time by the wretched inhabitants of that loveliest of lands can best be realized when we read of the awful horrors of the French Revolution of 1789-'94.

As honey was then an article of very great importance, a French writer, quoted by Mr. Wildman, "recommends it as worthy the particular attention of the schools of agriculture which he proposes should be established in different districts of France." That is in line with what Mr. W. C. Frazier advocates in this number—see page 700.

The author is confident that he has the best hive in use, and that his system combines all the advantages of the others. It seems from this that the desire to make a new hive is nothing new; and that same desire to improve our condition is what makes the difference between France, England, and the United States on the one hand, as contrasted with the stagnant and effete Egyptians, Arabs, Turks, and other peoples cursed with a religion based on fatalism, or predestination. Some nice copper-plate engravings show his hive, which is 7 in. in height and 10 in. in width. As showing how two persons sometimes adopt the same idea at the same time, each ignorant of what the other is doing, Mr. Wildman says that the Count de la Bourdonnaye, in Brittany, France, did practically the same thing. Each hive held about a peck.

In one of our exchanges lately, somebody was wailing because the honey-extractor had ever been invented; but in order to get along without one, Mr. Wildman tells us, "Before the combs are laid to drain out their honey, they should be carefully cleaned of every sort of filth or insects. The crust with which the bees cover the honey in them should be pared off with a sharp, thin, broad knife, and the combs themselves should be divided through the middle, in such a manner as to render the cells open at

both ends, that the honey may flow the more freely out of them. The combs should be laid in this state on sieves, or some other contrivance which will afford the honey a free passage through. It will run quite clear; and the honey thus obtained should be kept by itself, as being the purest and best."

That's good, but too slow for Cuba at least. What a revelation to the writer of the above to see the large extractors of to-day!

All have heard about the poisonous honey which Xenophon's soldiers ate during his famous retreat. Mr. Wildman gives the words of the famous writer and soldier as follows, from the Greek, written about 400 years B. C.:

"The soldiers sucked some honey-combs in a place near Trebizond [in Asia Minor, on the Black Sea, latitude 41° north], where there was a great number of bee-hives. All who sucked them became intoxicated; vomited and purged; not one was able to stand upon his legs. Those who had taken but little were like men drunk; but those who had taken a good deal were like mad men, and some lay like men dead. The next day, about the same hour, they recovered their senses; but it was three or four days before they were entirely restored, as if they had taken a poison."

It is believed that this honey came from the *chamærhododendros*; and if we were certain that those soldiers pronounced that word many times it would account for much of "that tired feeling" that seems to have overcome them.

In the previous issue I spoke about the advantages of Spanish broom as a honey-plant. Mr. Wildman speaks even more highly of it than Mr. Mills did; but it must not, I am now sure, be confounded with common broom, which is a sorghum. Spanish broom is described as having many long flexible rushlike twigs, and yielding a large crop of honey to those who formerly had but little. I believe this plant is what the French call *genet* or *plante de genet*, which was the insignia of the Plantagenet dynasty in England, commencing with Henry II. in 1154, and ending with Richard III. in 1485.

The island of Corsica, just west of Italy, is spoken of as a remarkable place for bees. When it was "subject to the Romans a tribute was imposed upon it of no less than 200,000 pounds of wax yearly. Indeed, the laurel, the almond-tree, and the myrtle, in the flowers of which the bees find so much sweetness, are very common there; and the hills are all covered with wild thyme and other fragrant herbs."

In the A B C of Bee Culture is related the experience of some mathematicians in finding the angles of a figure which would contain the most, or have the largest area. Koenig, by a most elaborate system of figuring, put it down as 109° 26' for the larger angle, and 70° 34' for the smaller one, or 180° together. Owing to an error in the book used, this was corrected to 109° 28' and 70° 32'. That is, a six-sided cell or cup will hold more than any other cup of the same diameter and depth. It seems hard to believe that any blind force worked out this problem, for the great Maker of all things has no problems to work out nor experiments to make along this or any other "line."

It seems that the great enemy of bees in England when this book was written was the wasp. Many pages are devoted to this insect—how to destroy it, etc. In our day, however, this creature is better understood, and is seldom if ever mentioned as a disturbing element in the apiary. But locality may make a difference, for in a late number of the *British Bee Journal* the matter of their destruction by means of cyanide of potassium was discussed. They are spoken of as a "plague."

Mr. Wildman inserts a good deal of Latin po-

etry in the fore part of his book, which might be of interest to those who have a taste for the classics.

W. P. R.

Medina, Sept. 8.

RESTRAINING RUNAWAY SWARMS.

THE FUN (?) OF NOT HAVING CLIPPED QUEENS.

If I were to take my choice of running my apiary with unclipped queens or going out of the business, I think I would step down and out. I do not see how any intelligent bee-keeper can run an apiary of 50 or more colonies, and take any pleasure or comfort with unclipped queens. Let me draw you a real picture.

I chanced to call on a noted bee-keeper one day in the height of the swarming season. I found him with an assistant looking over two or three bushels of bees in as many empty boxes and baskets, looking out the queen. At another part of the yard were seven large first swarms that had been clustered for over an hour in the hot sun, just getting up steam to take French leave. Such a time! In less than a minute the whole lot was high in the air. I called to the owner, saying that there was a cloud of bees leaving the yard. He looked up and over in the direction where the bees were, and, calling to his help, shouted, "There, them cussed bees have all left the pear-tree, and are going for the woods. Hurry up! bring that pail of water! fetch me the looking-glass! get the shotgun! Where is the force-pump? I thought I left it by the wood-shed—run! there, Henry, pelt them with dirt—throw stones among them;" and before the pump could be got in motion or a focus could be got on them by my friend, who was running backward and whirling a large looking-glass over and about his head, or the shotgun loaded, the bees were moving outside of his place and going across a neighbor's rye-field, with a half-dozen wild and excited men hot in pursuit. As they passed the house of the man who owned the rye I heard some angry and crooked language, and I'll "bet a quarter" that, if that man had had all of my friend's bees inside a pile of straw, there would have been a fire, and my friend would have had fewer bees. If those queens had had their wings clipped, would such a state of affairs have happened? No.

Still another, and a picture that is later. Only this past summer one of our neighbors, who is a farmer, and keeps about 30 colonies, lost over 20 nice first swarms of Italian bees that nearly all went in one direction for the hills. Only one of the 20 was found that we know of. The rest, I suppose, found lodging-places, and perhaps will never be heard from.

Does this pay? I guess not; and when he comes to take off his boxes I think he will see the result of these 20 swarms that were lost. Would this have happened if the queens' wings had been clipped? No.

I could call to mind lots of just such pictures as this. Yes, friend Root, I want all my queens clipped as soon as they are laying, and, what is more, I will have them clipped. I always carry a pair of scissors; and every queen I come to that is ready, off goes one of her wings. For the last 17 years I have controlled from one to two hundred colonies, and I have never had a case come under my observation where a queen was superseded on account of her wing being off. I have not lost one first swarm in 17 years by going off; and this season one day I had over a dozen swarms, and I did not sweat or worry one bit. Every one came back to its own starting-point. Yes, I would go out of the

business if I had to run my bees with unclipped wings.

N. F. BOOMHOWER.

Gallupville, N. Y., Aug. 21.

LADIES' CONVERSAZIONE.

SCRAPING SECTIONS.

HOW EMMA WILSON DOES IT.

You want to know, Mr. Editor, how bee-keepers scrape sections. As that part of the work falls to my lot I have scraped a good many thousands. Formerly I scraped them on the table. If you set your sections directly on the table to be scraped, you will find trouble in two directions: 1. When you scrape down your section your knife will strike the table, not allowing you to scrape clear to the bottom of the section; 2. The accumulating bee-glue will be constantly in your way. So, instead of setting the section directly on the table I use a block 6 in. long, 5 in. wide, and $1\frac{1}{4}$ in. thick. Of course, any of these dimensions may be varied. With this block I can rapidly scrape the edges and sides of the sections, clear to the bottom, as the section stands solid on the block, and the bee-glue falls on the table, out of the way. Latterly, instead of a table I use a board, usually a flat hive-cover, holding the board on my lap, the scraping-block on the board. I find it a great improvement. Holding up the arms to scrape over a table is tiresome. It is much less tiresome to scrape in the lap, as the arms hang in an easy position.

Whenever too much bee-glue accumulates on the board, so there is danger of its falling on the floor, I lift the board and dump the bee-glue into a box standing near. For scraping I use a common steel case-knife kept sharp, not holding the knife flat against the surface so that it can cut into the wood, but at right angles to the surface being scraped. While a sharp knife is desirable, a coarse rather than a fine edge is needed. It will pay well to stop and sharpen the knife whenever it needs it. I like to have the sections to be scraped piled in front of me on the table, with the case I am filling at my right hand, sufficiently raised so that I neither have to stoop down nor reach up to put the sections in. Every little extra move counts when doing a hard day's work.

If more than one grade is to be scraped, more than one case must be at hand. As each super is put on the hive, a memorandum is penciled on one of the central sections, giving the number of the hive, date of putting on, and number of super put on that hive. When scraping I keep a cake of scourine handy, with which to remove these pencil-marks. This is easily done by dampening a cloth and rubbing the marks with a little of the scourine.

If I were allowed to select my own time to scrape honey, I would always select a cold day when bee-glue is brittle and easily removed. It is hardly possible to do as good work when the bee glue is warm enough to be sticky, besides being a much more tedious job. It is true, the dust from the bee-glue is worse when cool and brittle, affecting one very much as if he had a hard cold; and people peculiarly sensitive in this direction may prefer to have warmer weather and take the sticky bee-glue in preference to the dust; but I would rather stand the dust.

Whatever may be the advantage of using partly drawn sections left over from a previous year, when it comes to the matter of scraping I very much prefer those that have been on only once. Sections which are left on late in the

season are much worse to clean than those taken off earlier.

The way in which sections are put into the super has much to do with the amount of bee-glue on them. They will be more easily cleaned if they are wedged up tight in all directions so that no cracks are left. Scraping a single case of sections may seem to be fun; but when I have scraped 1000 or 1500 in a day it seems like work, and hard work too. I don't know that all of my plans are best, and hope that, in the reports that come in from others, I may get some hints that will make the work easier for me.

EMMA WILSON.

Marengo, Ill., Aug. 23.

AN OPEN LETTER TO RAMBLER.

SOME GOOD ADVICE FROM ONE OF THE KIND-HEARTED SISTERS.

Dear Rambler:—It will be putting it in mild terms to say that we enjoy immensely following you to and fro in your rambles in the golden State of California, through the medium of GLEANINGS; but we always think of you as a "poor lone bachelor," subjected to aches and pains, difficulties and disappointments, battling through life on a lonely ranch, without the tender aid and assistance of a noble helpmeet. We can not think of your lonely cabin as being a home, for the organization of a home depends mostly upon the gentler sex, who are especially adapted to the management of the household and the comfort and well-being of man. It is true, wedded life may have thorns and cares; but they are fruitful, while all others are dry thorns. Why, my dear friend Rambler, don't you know that God ordained wedded life, the family, its natural laws, and science? Obeying these laws renders wedlock happy. It is only a breach of them that causes domestic unhappiness. Matrimony would only bring out the better part of your nature, and cause you to cherish and be cherished, while, on the contrary, many good qualifications in a bachelor's life are allowed to sleep a deep sleep. There are plenty of industrious, methodical young women over this vast land who would be very much elated over the espousal of an energetic influential bachelor of your standing, and who would be very agreeable, and make life worth living—who knows how to discharge her household duties in a quiet and easy style, without fuss or dust-clouds, and without usurping authority over man, or causing him to lose his freedom, which some men love so much; and if you should ever be so fortunate as to captivate such a one you would have no more need of brown birds, squirrels, and rabbits to entertain and keep you company in your lonely hours. Why, bless you, matrimony need not hinder you from hollerin' and singin', or stompin' the dust off your feet, or hangin' your coat on any nail you choose. The dear wife would only add a charm to the merriment, and, instead of entering the forsaken cabin (with a big pile of dirty dishes stored away in some corner, a smutty flapjack griddle, a bed flattened by many a night's restlessness, a concrete floor as dirty as mud), you would enter a snug, clean, tidy house, which indeed would be a compensation for your daily toil. You would have no more occasion for eating cold potatoes, cold pancakes, cold coffee, etc. You would find a genuine art displayed in getting up your repasts. Labor and toil would then be linked with pleasure and happiness; and the very atmosphere around your cabin would be sweetened. This is no humbug. I know whereof I speak.

ANONYMOUS.

MRS. HARRISON'S NON-SWARMING BEES.**WHY THEY DON'T SWARM, ETC.**

Mr. Root:—Perhaps some of your readers would like to know that I've a strain of non-swarming bees, and I've had them on trial for four years. Previous to this time I had to get around lively during swarming time, but of late years I've had it easy—plenty of time to swing in the hammock and read about what other bee-keepers are doing.

LIGHT HONEY-CASES FOR WOMEN.

I've lots of 'em. A child can lift them, and they do not need a bee-escape either. Lay them down on the grass; they will not get damp, for it is brown and sear.

WOMEN AS BEE-KEEPERS.

Any woman can *keep* bees like mine. Let them have their own way; that is the way I have done this summer. I furnished a receptacle, and asked them if they would please to give down a little extracted honey after bass-wood passed by. They gave me a three-gallon jar full, which I prize highly for cakes, compans, and coughs.

I've been resting upon my honors as a bee-keeper for the fourth season, and there is another in prospect, for white clover can not stand such severe drouth. I look out from my window upon a beautiful May cherry-tree. The spray is fine; I can see it distinctly, for the leaves have nearly all fallen. The ground under the green ash is covered with dry leaves. How they rustle under my feet! Very fine dust can now be gathered for the fowls to dust in during the coming winter. Every leaf and twig is covered with it.

COOKING WITH HONEY.

What extravagance! I'll be satisfied if I can get honey for the outside of my cakes, and not the inside. Cooking with it is one of the lost arts.

MRS. L. HARRISON.

Peoria, Ill.

CHOCOLATE CREAMS.**CARPENTER BEES.**

Take one pound of granulated sugar and one teacupful of water. Stir together until the sugar is thoroughly moistened; then place over a hot fire, and boil without stirring until a few drops dropped into cold water will retain their shape and not mix with the water. If it gets crisp in the water, it is overboiled and must have a little water added and be tried again. If it mixes with the water it has not boiled enough. By a little practice you will learn the exact degree; and when this is reached, the sauce-pan must be immediately taken from the fire and set in ice, snow, or very cold water, that the candy may chill quickly, as the candy changes rapidly. When the candy is cool enough to bear your hand in it, begin to beat it with a spoon; then, as it stiffens, with the hands, working it as if it were bread dough. Work about 10 minutes or until it is smooth and shining. Flavor with a teaspoonful of vanilla as you work it; then form it into balls, and dip into chocolate prepared as follows:

Take a piece of unsweetened chocolate and melt it in a cup. Soften it by adding a teaspoonful of water, and then add of the cream until it is fairly sweetened. Set the cup containing the chocolate mixture into a bowl of hot water, and dip the balls into the mixture one by one. The sugar and water should be boiled in a thick sauce-pan, and should *not* be

stirred once while boiling, as that would make it coarse-grained.

The above recipe and directions were given me several years ago by a confectioner whose candy-kitchen was located in a building at the rear of our hardware store. His stove had a habit of "balking," and on such occasions he would bring his candy over to our store and finish it on a gasoline-stove which we kept filled for exhibition purposes. As the stove stood beside my desk I had a good opportunity to observe him while at work. I do not think that he ever boiled over three pounds of sugar at one time, as he said a larger quantity would not chill quickly enough to prevent the candy from changing. In testing it he disturbed it as little as possible, merely dipping the spoon into the top of the boiling mass.

While preparing some candy for the holidays last year we were interrupted by callers, and the candy was taken from the fire too soon. It was so soft that it could *not* be worked with the hands; yet after hard and continual stirring with a spoon it became smooth and shining, but it was of the consistency of very thick molasses. As it was entirely too soft to mold into balls we planned to make cocoanut creams of it by stirring in shredded cocoanut; but being interrupted again, the candy was placed on a shelf of an unused cupboard, there to repose, forgotten, for a couple of months. When finally it was remembered, and the dish containing it brought forth, it was found to be soft and moist, with a thin glaze or film of hardened candy over the top. Beneath the film the candy had thickened somewhat; for, on turning the dish sidewise, it would not run out, but just tremble, as thick jelly does when the dish containing it is turned. It is said that chocolate creams improve with age, and this candy certainly did, for it had a fine flavor not possessed by fresh candy.

I believe that those insects which Mrs. AxteLL inquires about, page 499, July 1, 1892, were bees. As this is a timberless country, absconding swarms take possession of abandoned coyote-holes and such other holes as are found among the bluffs and in the tablelands. There is a sort of bee here which resembles a bumble-bee in every respect, except that it is smaller, probably not more than one-fourth as large. It makes the same "hum" as a bumble-bee. It works in holes in old sod houses. The holes are just large enough for it to pass through. It appears to work singly and not in swarms. I mean by that, that I have at different times watched holes from which a bee had passed out, but no other bee passed out; and after a time a bee returning would pass in; and, after remaining in some little time, it would pass out again. While it remained in the hole, no other bee passed in. The holes are usually situated just under the eaves. They are not cross. Not one has ever offered to sting me, and I have dug into their holes quite a little way; but I never reached the end of the passageway, therefore I am not able to say whether they store honey or not. There are but few bumble-bees here. There is also another variety of wild bees here. They are small and woolly, and are called black bees. We have never had the common black bee in our apiary, nor have I ever visited one in which they were kept, therefore I do not know whether they are the same or not. When transferred to a hive, the wild black bees are said to store more honey than the Italians in the same apiary.

LONA H. BOHRER.

North Loup, Neb., Aug. 7.

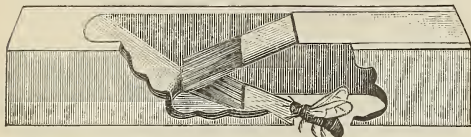
[Bees described in your last paragraph are evidently carpenter bees.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

ALDRICH'S BEE-ESCAPE.

I send you by mail to-day a new bee-escape which I devised. If you find it worth while to tell us what you think of it, I shall be much obliged. If not, all right. With me it works to perfection. The block I send you is designed



to represent a board. The escapes can be made for ten cents apiece. CYRUS C. ALDRICH.

Morristown, Minn., July 19.

[We have no doubt that the escape would work nicely. Whether it would be cheaper than the Porter, which we know gives satisfaction, we can not say.]

PECOS VALLEY; A REPORT FROM ONE WHO LIVES THERE.

There have been great fraudulent advertisements gotten up regarding the Pecos Valley, which is a great ruin to many people who leave their homes and come here. Will you publish a true description of the country if some one will write it up? These fraudulent advertisements are gotten up by land agents who are robbing many poor people. G. W. Wood.

Monahans, Texas, Aug., 1893.

[Yes, certainly.]

OIL-STOVE TO KEEP HONEY.

Can any one at the Home of the Honey-bees tell me whether or not the gases generated by oil-stoves will have any deleterious effect on comb-honey? My honey-room shows a tendency to dampness, which, as you know, is ruinous to honey stored for any length of time. Heretofore I have overcome this fault by keeping a small wood heating-stove in the honey-room; but as a wood fire needs almost constant attention I have thought of replacing it with a kerosene-burner. F. M. CRANE.

River Sioux, Iowa, Aug. 11.

[This was forwarded to Dr. Miller, who replies:]

I don't think an oil-stove is a fit thing to be in a room where people want to breathe; but I doubt whether it would have any bad effect on honey. A small cylinder stove with hard coal might please better, and is very little more trouble.

EXPERIENCE WITH BEE-PARALYSIS; SALT A DOUBTFUL CURE.

A. I. Root:—At your request I write to report my experience for the last 12 months with bee-paralysis. One colony, purchased from a dealer in South Carolina, brought the disease into the apiary. It spread from one colony to another until, by the close of last year, it had infected all but two. At times the dead bees were strewn very thickly over the ground in the apiary, and it seemed as if every colony would perish; but the loss at last was only one. Many were so weakened that they barely survived last winter. The disease broke out again in the spring, and showed itself in nearly every hive during the honey season, but gradually disappeared, until now there is only one that appears to be infected. The only remedy

used was a handful of salt, thrown early in the spring on the bottom-board. In wet weather the salt would melt, and the bees had to wade through salt water to get on the combs. In dry weather the water would evaporate, to reappear again with a damp atmosphere. At this season the salt is promptly removed by the bees; but in the spring they did not do so. The salt thus applied may have had something to do with the cure, but there is room for doubt.

Our honey-flow in the spring was lost by reason of the constant rains from April 20th to May 15th. Extracting from some ten colonies, and from the super only, there was a yield of about 150 lbs. of dark honey. The extracting might be repeated now with a similar result, but the surplus is reserved to build up weak colonies this winter. T. S. FORD.

Columbia, Miss., Aug. 11.

PROBABILITY OF SWARMS UNITING WITHOUT QUEENS.

Referring to Mr. Major's item on page 652 of GLEANINGS, you will see that he says nothing about swarms uniting—it is in regard to their returning. A swarm out alone almost invariably returns to its own hive or location. With only 40 colonies there would not often be several swarms out at the same time. I should like to have not only Mr. Major but any one else say, if two swarms are out at the same time, they are not almost certain to unite, and, after they are united, do they ever separate, except to a small extent, and return to their respective locations? In my experience, swarms without queens with them are more likely to unite than are those with queens. They spread out more in hunting for their queen, and remain longer in the air without attempting to cluster; besides, they are in a mood to join any thing or anybody with the hope of getting a queen. Flint, Mich., Aug. 18. W. Z. HUTCHINSON.

[It is true, that Mr. Major does not say in just so many words any thing about two or more swarms uniting; but we feel quite sure that he implied that, or, at least, had it in mind, because, you will observe, in his last sentence he says, "I can not see why Mr. Taylor's bees should act so differently from mine;" for Mr. Taylor said his bees without queens united, or were quite inclined to do so; and Mr. Major says his bees did not do that way. If we misinterpret him we should be glad to have him correct us.]

THE LANGDON NON-SWARMER NOT A FAILURE.

I have visited apiaries, and seen frame hives filled with bees and honey, with the frames all at one side of the hive, or the combs built cross-wise of the frames, etc. Now, would you condemn a frame hive because a few had failed with them? Certainly not. I used 18 of Langdon's non-swarmer this season, and I think I secured honey enough more with them to pay their cost. I did not succeed as well with them as I hoped to, and I think my lack of success was due to myself, or partially at least. I did not get the non-swarmer attached to the hives until the bees were about ready to swarm. They had the swarming fever on, consequently some of them swarmed. I then moved the hive that the swarm came from, to a new location, and put an empty hive, or one filled with full sheets of foundation, in its place, with the supers on, and hived the swarm into it, and had no more trouble from their swarming. Such swarms worked well, and I got nearly all my surplus from them. Colonies that I put the attachment on before they got so near ready to swarm did not swarm.

I had no trouble from swarms smothering. I

do not see how such a thing could happen unless the hole in the hive did not match the hole in the non-swarmers.

Sealed covers are not a failure, but we want plenty of bottom ventilation, and enough packing on the sealed cover to keep it warm. Then we shall not be troubled with dampness or mold.

EGBERT R. MAGOON.

Malone, N. Y., Aug. 22.

DRONE-CELLS VS. QUEEN-CUPS; FURTHER EXPERIENCE SHOWS THEM TO BE A COMPLETE SUCCESS, SAYS J. D. FOOSHE.

I mail you three cup queens by to-day's mail. These queens are as fine as I can raise in the swarming season. I have no doubt now about the drone comb for cups. I had about 200 wax cups on hand when I found it out, but have never used one of them since. The bees never tear them down in upper stories as they sometimes do the wax cells. I was troubled a good deal with that with the wax cups. Bees will build cells or larvæ in any kind of cells, when they are in proper condition—that is, queenless and broodless, whether there is jelly or not; but the jelly facilitates the transferring of the larva so much that I would not dispense with it; and then the bottoms of the cells are so thin the larva on the end of the instrument used will not come off without a little pressure, which is liable to puncture a hole in the bottoms of the cells; but with the jelly it takes off the larva. I am elated with this plan, as it does away with making cups, which took a good deal of wax.

J. D. FOOSHE.

Coronaca, S. C., Aug. 25.

[A full description of the drone-comb plan referred to by Mr. Fooshe is given on page 635 of our Aug. 15th number. It strikes us that our correspondent has contributed something exceedingly valuable and practicable; and were our own queen-rearing operations not at the close we would try it in preference to any other method that has been produced.]

SERIOUS RESULTS FROM A SINGLE BEE-STING.

The following, clipped from the *Express*, of Monticello, Ia., under date of Aug. 11, gives another example of the occasional serious effects resulting from a single bee-sting. Why do we publish it? Simply because we wish to give the bad as well as the good—indeed, the whole truth.

Miss Jeanette Himebaugh, a young lady, the daughter of Mr. and Mrs. Geo. L. Himebaugh, who lives four miles south of Monticello, was nearly killed by the sting of a bee last week. Within five minutes after being stung she was in spasms, and there was little hope of saving her life. She was in the yard when stung, and started directly for the house, with the exclamation that she had been stung by a bee, and that she felt its effects through her entire body. Before she had walked three rods she needed the assistance of her mother, who laid her upon a sofa, and, to the horror of the members of the family present, she was attacked by spasms in a few minutes. These were so violent that it was not supposed she could live until a physician could be summoned. Her uncle, however, started to Monticello for a doctor, and in less than an hour from the time of the stinging, Dr. Mirick was at the side of the unfortunate girl. Ten minutes before his arrival, Miss Himebaugh revived sufficiently to whisper the request that her arms be put about her father's neck, but she immediately relapsed into an unconscious condition, and the doctor found it was impossible to force any medicine or stimulant into her mouth. Antidotes and remedies were administered by means of hypodermic injections into the arm. She was wholly insensible to the pain thus produced; but after a time the medicine thus injected into the blood took effect, and the jaws relaxed sufficiently to allow the administration of brandy. After three hours of work,

Dr. Mirick brought the patient out of danger. She was abed for several days. Mr. Himebaugh, in speaking of the matter, says that the poison acted much like a rattlesnake bite, and that the treatment was much the same as pursued in such cases. Miss Himebaugh was stung directly over the eye, but not until after her return to consciousness was the locality known. Her hands and feet commenced to swell immediately, but the wound did not commence swelling until a day or two later. [C]

We are assured by a subscriber that the facts are correctly stated. This does not prove that the bee-business is a dangerous one, any more than it would argue, on a similar line, that horses and railway trains are dangerous because of the occasional deaths which they occasion. It simply goes to show that there are some people in rare instances who are affected very seriously.

Following the above is an item which we clip from the last issue of the *American Bee Journal*:

The daughter of Mr. J. E. Frith, Secretary of the Oxford Bee-keepers' Association, living at Princeton, Ont., died suddenly after having received a bee-sting on the temple.

REPORTS DISCOURAGING.

My bees have not made any thing for four years; and the prospect is, they won't get enough to winter on, as it is so dry the Spanish needle is almost all dead, and that is our only source here.

LUKE SNOW.

Lamar, Mo., Aug. 11.

This has been a very poor season for bees here. I have not used a section that I got of you. I had 45 stands in the spring, and at present I have 70 and little honey. Bees will starve in the spring if there is no feeding done.

Deshler, O., Aug. 28. THOS. OBERLITNER.

I had 50 colonies, spring count, and they have not stored one pound of surplus up to date, and at present there is *very little* honey in the brood-chambers, and I had but one natural swarm. If they get no honey from fall flowers I shall have to feed sugar syrup.

Brookfield, Mo., Aug. 17. J. D. BLOOD.

Bees did very poorly this season in this part of the country. They scarcely made a living after July 1st. The drouth was partly the cause. It was the poorest season in four years. I went into winter quarters with 48, and lost all but 3 in my old reliable chaff hives.

Portage Creek, Pa., Aug. 29. R. R. WELLS.

The honey crop in Northeastern New York is poor—not any better than last year: the same in Vermont, so far as I can learn. There were lots of clover-blossoms, but the dry weather cut the crop short, and basswood did not amount to much. Others are giving such good reports through GLEANINGS I suppose commission merchants will take advantage of it and start the sale of honey low.

E. L. WESTCOTT.

Addison Junction, N. Y., Aug. 21.

I see in GLEANINGS reports of some wonderful crops of honey in nearly all the Middle and Western States, but can find nothing from the South. The crop has been a complete failure in this immediate neighborhood, and I should like to know how it is in other parts of the Southern States. I got about 150 lbs. of honey from 50 colonies. The very few other beekeepers in the county have fared about as well.

Americus, Ga.

D. P. HOLT.

[The season has been poor throughout almost the entire South.]

NOTES OF TRAVEL.

ON THE WHEEL.

Ever since our Ohio Experiment Station has been moved from Columbus, O., into our neighboring Wayne Co., bordering us on the south, I have proposed paying them a visit; but I never got around to it till Thursday, Aug. 31. I started about 6 o'clock in the morning, and reached Creston, Wayne Co., between seven and eight, where I stopped to visit the celery and onion farm of Johnson & Jordan. They work for the early market on celery, and succeed in getting three crops on the same ground in a single season. They use boards for bleaching the first and second crops. These are one-foot boards, set on edge each side of the plants, and held by bits of wire bent like this [the wire being long enough to draw the boards up close against the celery. The White Plume and Self-blanching are the kinds generally bleached between boards. About the time the boards are put up to the first crop (which comes off about the first of July), another crop of celery is put *between* the rows, the rows being set in the first place three feet apart. When the first celery is taken from the ground, the boards are moved away, and the place where the first crop stood is thoroughly cultivated, and the ground stirred clear up to the new plants. Of course, the hands have to be carefully trained in order to avoid stepping on the new plants while they are working with them, and taking up the old. In fact, the boss himself will tramp on the new crop if he does not mind where he puts his feet. Of course, in getting three crops off the same ground in one season there has to be heavy and constant feeding of the soil, and water applied whenever it is dry. As they can not get stable manure for their many acres of celery, they were using, when I was there, finely ground bone and phosphate mixed together. To apply this to the growing plants, the ground was pulled away by hand cultivators, or otherwise, until the roots of the plants were visible. Then the bone and phosphate were sprinkled in this trench. Lastly, a stream of water from a hose was turned on so as to fill up the trench completely; and then the dirt was thrown back, some fine dry soil being put over the wet surface so as to prevent baking. I told them my impression was, that bone would hardly act so soon as to do the crop that it was applied to much good; but they assured me that, where it was applied, the celery was much larger, and they could see a difference in eight or ten days. Now, mind you, during our recent drouth they had been putting on the water quite liberally; and this very thing which faces us right here troubles me exceedingly. I asked them if they had tried the phosphate and bone without water, or the water without the fertilizer. They said they had not. All together it did the celery good; but it was not clear to me whether the phosphate and bone had any thing to do with it. Water alone would certainly have produced a marked result; and even plowing away the dirt so as to expose the roots, and putting it back again, would of itself produce a considerable result. You see, we are doing a great amount of labor, and we are putting on different fertilizers; and yet who can tell us whether it is stirring the soil, putting on the fertilizer, or adding the water, that produces the result? I submitted the matter to E. C. Green, of the Ohio Experiment Station, in the afternoon of that same day, and he told me this was just what our whole country greatly needed—decisive experiments in lines like this. Now a word about the water:

Their swamp has ordinarily been too wet; and, in fact, for crops where the roots get clear down, like corn and cabbage, it has been just about right during this dry season. But for celery, especially when the plants are first put out, water is an absolute necessity. They pump it up into a big tank by means of windmills; and then, by means of iron pipe and hose, they carried it all over their grounds, running it in a little furrow close to the row of plants. But during the past drouth the windmills were inadequate. They were only ten-foot mills, however; and to back up the mills they were using a little steam-injector run by a ten-horse boiler borrowed from a thrashing-engine. This injector would raise, perhaps, ten feet high into a tank 30 or 40 barrels an hour, and they thought it was cheaper than any sort of pump. With a pump there is machinery to get out of order, and wear. The injector, however, had no machinery about it, the steam acting directly on the water. Of course, it warmed the water a little, but this was all the better for watering the plants.

I found them selling their refuse stalks, or trimmings, for 50 cts. a bushel, for pickles. The latter price was where the trimmers pack it up in bushel boxes. If people come and pick it up from the refuse heap, the company gets 25 cts. a bushel; and people were there all the while, and took away the trimmings just about as fast as they were thrown down by the packers. They get 20 cts. a dozen for their celery packed in cases, ready for shipment; and it retails two stalks for a nickel.

All around the city of Wooster there are immense hills. By 11 o'clock I began to feel tired, hungry, and considerably longing for my accustomed nap. I had already ridden 20 miles since breakfast, and I thought I would keep on just five miles more; but I began to meditate, that, if I did, I should get there pretty well exhausted; and I believe we ought to avoid such exhaustion all we can—especially where we have been invalids. On the top of the hill I came to Madisonburg, a cosy little town of half a dozen dwellings, with one which seemed to be a postoffice, grocery, and general store combined. I asked a boy if there was a hotel in the place. He shook his head. Said I, "Is there not a place somewhere in the town where I can get dinner?"

He put his head into the store, and finally replied, "I guess you can if you will eat a cold dinner. We don't have no cooked dinners nowadays."

Then I petitioned first for a place to lie down fifteen or twenty minutes. This was granted at once, and I was shown into a rather pretty sleeping-room; but the furniture was mostly of a masculine character, notwithstanding the bed was nice and clean, and in a few minutes I was lost to hills difficult to climb, and every thing else. At the end of the appointed twenty minutes I opened my eyes and began to speculate, as I often do under such circumstances:

"Well, old fellow, where are you *this* time, and what are you doing *here*, any way?"

I rubbed my eyes, and gathered up the broken threads where I left off. Pretty soon I opened the door, and announced myself ready for dinner. The proprietor of the store looked a little troubled, and said he did not know what he had for dinner, after all, unless it was what they had on the shelves.

"Well, give me some crackers and cheese, if you can't do any better."

"Well, to tell the truth, stranger, the cheese is just out."

"Then let's have the crackers," said I.

He rubbed his head with his hand, and then replied, "Well, the fact is, the *crackers* are just

out too, unless you want some of those sweet ones;" and he pointed his thumb at the glass cases containing crackers upon the shelf. Now, I never liked sweet crackers, and here was a dilemma. Pretty soon my eyes rested on a case that was labeled "Pretzels;" and there, sure enough, were the crooked things right up against the glass. When I recovered from that spell of fever, one of the first things the doctor prescribed for me was pretzels and cold coffee, half milk. They allowed me to have these five times a day, and I used to think them the most delicious food in the world when I was so hungry. I instantly replied, "Oh! you have got some pretzels—hand them down." Next I espied some ten-cent boxes of sardines; and with the help of the good appetite given me by my brisk riding, I made a very satisfactory dinner on the pretzels and sardines. There is a moral right here, and I guess I will whisper the moral to the good housewives who may happen to read these pages. If your husbands are in the habit of finding fault, and complaining of the bill of fare, just get them to riding a wheel, and then you will see them thankful and happy—yes, in a frame of mind to give thanks to God, even if they should not happen to have any thing better for dinner than crackers and sardines. This matter of going to the expense of purchasing a wheel confronts me constantly; but a great many times a wheel will take the place of a horse, or a horse and buggy both; and when we consider that the expense of keeping a wheel is nothing to that of keeping a horse, it may not be such a piece of extravagance after all; and when the women-folks get to riding, as they are here in Medina, one wheel belonging to a family, and so arranged that it can be used for men and women both, it seems to me such a wheel might many times be a saving of expense instead of being considered an extravagance.

I pulled out some money, and asked the store-keeper how much I owed him.

"Just 23 cents."

I gave a whistle, and said, "Why, didn't you forget to charge me for my bed?"

"Why, I didn't expect to charge any thing for that; but if you have a mind to, you may make it an even quarter."

Now, who will say this is a hard world to get along in? This man had not even learned my name; and yet, after having shown himself so neighborly, and bidden me make myself at home in his bachelor quarters, he consented to accept the *two cents* odd change for the accommodation! If I had gone on four miles further, and asked permission to lie down, even on a lounge, in one of the large hotels of the city, the charge would have been 50 cents. Give me the country, or little town, even if the postoffice, store, and grocery *are* all in one.

I passed through the beautiful city of Wooster, stopping again and again to admire that grand-looking pile of buildings called the Wooster University, which is set upon the hillside so that it is not only a conspicuous object, but a thing of such beauty that it is a joy to the beholder for miles and miles in every direction. When I was half way up one of those longest hills south of the city I decided to wait till the man who was before me should come up, so as to inquire of him where E. C. or W. J. Green lived. Did you ever! It was E. C. Green himself! That was one of the happy surprises that I blunder into now and then. I was tired enough to accept his invitation to load my wheel into the back end of his buggy, and then he turned around and went *up* hill instead of down. He evidently divined that I would want to visit their new greenhouses first. There are four of them, and they are something over 100 feet

long, and perhaps 20 wide. They are built with the intention of testing every thing belonging to greenhouses, evidently. For instance, one house has the glass lap; another butted, and so on: one house has the "meat-saw" ventilator; another the Hibbard, and the other some other; and I was greatly pleased to be able to put my hand on the cranks, and raise the sashes by all of the modern methods of raising and lowering sash. The heating is to be done on a similar plan; also the watering; and I saw beds made expressly for sub-irrigation, others for sprinkling, etc. Finally I heard something said about the Rider hot-water engine that pumps the water from a deep well into the tank elevated above the buildings. A brand-new machine has been recently set up in the basement, and the courteous and obliging engineer fired it up expressly for my benefit. It will pump ten barrels of water an hour, elevating the water something like 100 feet, and the expense is only $2\frac{1}{2}$ cts. per hour, even when run by kerosene oil. Now, here is a triumph of genius. A six-horse-power engine can be run at only $2\frac{1}{2}$ cts. an hour (cheaper still, I suppose, if coal is used instead of oil), and yet there is no boiler nor steam—nothing to explode nor blow up; no water-gauge, safety-valve, nor any thing of the sort. I believe these engines are mostly used for pumping, or for something where no great amount of power is required. One of them is used, I am told, in Wooster, for running a printing-press. When you want to start it, you take hold of the fly-wheel and set it going. When you want to control the power or stop it, turn off the oil. After the apparatus is fully heated up, however, it will run for fifteen or twenty minutes after the fuel is cut off entirely. It is very simple, clean, and neat. I was not able to learn the cost. Finally some one came in to say that the engineer was to keep on pumping, for they wanted considerable water for the steam-ditcher.

"Steam-ditcher, did the man say? Why, friend Green, have you really got a steam-ditcher at work on your grounds?"

"Why, yes; and that is one of the things, Mr. Root, that you want to see," and so we started off across the fields. But this paper is getting to be so long I think I shall have to tell you about it in our next.

OURSELVES AND OUR NEIGHBORS.

For the Lord thy God bringeth thee into a good land, a land of brooks of water, of fountains and depths that spring out of valleys and hills.—DEUT. 8:7.

And Isaac's servants digged in the valley, and found there a well of springing water.—GEN. 26:19.

And the Lord shall guide thee continually, and satisfy thy soul in drouth, and make fat thy bones; and thou shalt be like a watered garden, and like a spring of water, whose waters fail not.—ISA. 58:11.

Perhaps it is the present severe drouth that still prevails that has set my mind to running so much on springs of water; and very likely it is owing to the fact that I have been somewhat out of health, and find it difficult to drink to my heart's content unless I can find very pure water. This latter has induced me to rejoice when I have found springs and wells of pure soft water in my various trips on the wheel. There is one locality in Medina Co., about ten miles from my home, where I especially love to go. It is in the vicinity of a natural curiosity called Spruce Run. A few weeks ago two of our Sunday-schools here in the village held a picnic in that vicinity. I had told the boys in

my class something of the springs of pure water and the wonderful caves—not very extensive ones, it is true, but wonderful to myself and a class of urchins about a dozen years old, notwithstanding. Dinner was served near an immense spring that comes out of a cave on what is called the Waltz farm; but as the gorge called Spruce Run was almost a mile away, over a very rough country, it was thought difficult and dangerous for the greater part of the women and children. After the repast was over, however, I called for volunteers for an exploring party; and a great crowd, not only of boys but of girls also, and many women, followed. I first directed the boys to let the fences down very carefully, and showed them how to take the fences down without injury to the fences or the property where the owners had been kind enough to permit us to pass through.

It was a hot day in August, and all hands were almost as enthusiastic as myself in regard to finding springs. We first started in at the source, or near the source, of Spruce Run. A little rivulet commences cutting down gradually into a level field. In a little time it strikes sand rock; and as it cuts its way down into the rock, various springs start out and unite with the stream. The first one we found trickled out of the stone formation, perhaps two or three feet above the bed of the stream. I have many times decided that I will be sure *next time* to have plenty of tin cups when I start out on a trip like this; but, as usual, the ones who carried the cups had strayed somewhere else, and all we had to quench our thirst from was a little gem of a tin cup holding perhaps half a teacupful. I held it under the stream of cool soft water until full, and then passed it around; but it took so long to give all a drink that the first one wanted more by the time we got around, and so we might have stayed there all the afternoon. We finally decided to wait for a larger spring before fully quenching our thirst.

A few rods further down, and the stream has cut in so deeply that even the schoolboys of our crowd were unable to climb up the rocky sides. Further on, the cut became a gorge, or "canyon," as they would call it in California, and the cliffs were really dangerous. In fact, in some places the perpendicular sides seemed almost to come together overhead, while beautiful ferns and green vines and mosses started forth from every crack and crevice, making a most luxuriant growth, assisted by the spring water, and cutting off the light from overhead until it was a wonderfully cool and cavernous retreat on that hot summer day. Further down we came to a waterfall that had worn for itself a basin in the rock that has for years been called the "Bottomless Pit." I presume, however, the ground they had for terming it "bottomless," was, that one could not touch bottom in some places with a fence-rail of tolerable length.

A little below the fall we have what is called "Table Rock." The water had cut under until the sandstone cliff had broken away from the main rock, and stood aloft in the air, the only means of access being a bridge made of a couple of poles. Table Rock is large enough to contain some good-sized trees; and at the bottom of the chasm made by the breaking-away is a pathway carpeted with leaves and soft mosses. Dark caverns abound here and there in this vicinity; but none of them go in very far beyond where daylight reaches.

It had been reported that there was a wonderful cave somewhere in the vicinity, that, in earlier times, used to extend a quarter of a mile or so into the hills, but I had never been able to

find it; and, besides, at some recent date a fragment of rock had broken off and tumbled down, closing the passageway. I had made a good many inquiries, and tried to find it myself. On one occasion I found a fissure in the rocks, where I could, by listening, hear the splashing of a waterfall away off at its further end. Not having lights with me I pushed on in the darkness to get a drink of the delicious cool water; but the passageway finally grew too small for me. The boys were full of enthusiasm to explore these caverns; and after we had gone through Spruce Run they volunteered to follow me on some explorations. A woman who lived in the vicinity said she knew where the cave was which we wanted to find; but the day was too hot, and she was too old for such a tramp. Her daughter, however, 16 or 17 years old, thought she could direct us; but she evidently felt a little backward about such a scramble through the brush and over the hills. Finally a young man was found who admitted he could pilot us to the spot, but he threw in a little discouragement. Two boys had started out about a year ago, just as we were doing, and they spent some little time in the cave; but one of them *died* shortly after. I looked at the boys inquiringly after this piece of news, to see whether they would want to push ahead. Their verdict was quite unanimous.

"Go ahead, Mr. Root. If you lead we will follow, and the cave won't kill *us*, you bet."

So we pushed on. The weather was so warm, and climbing the hills so fatiguing, that it is not any wonder if the whole crowd of us were pretty thirsty all the time; and as we neared the spot, on looking about we saw quite a few of the girls and even some ladies slowly bringing up the rear of the procession. The entrance to the cave was in the side of a cliff on the hillside. The water had cut a sort of slit in the rock; and where it came out it was entirely too narrow for even the smallest boy to get through. By climbing up a little distance, however, the opening was wider, and one after another we got inside; and when once through the opening we climbed down to the floor and found ample room for the whole crowd. Then it became evident that, if we went further, we should have to have a lantern. What would the mothers say if I should lead their boys off into a wild cave like this, and they should become lost in some subterranean chamber, such as we read of in the vicinity of Mammoth Cave? I told them that we should have to have a lantern before we could think of going beyond where the glimpses of daylight reached; and almost as soon as I mentioned it there was a volunteer to go to the nearest house, about a quarter of a mile away, and borrow a lantern. Something was said about matches, but one of the boys said "Johnny" had some in his pocket. While we were waiting for the lantern, as our eyes became accustomed to the gloom we found we could see a good deal. The floor of the cave was covered with beautiful grayish-white sand. The shallow streams of spring water were deliciously cool as they passed over this sand. Somebody found a broken crock; and by sinking it into the sand we got some of the water to drink. The tin cups were all gone this time—even the diminutive one. Almost as long ago as I can remember, I have greatly enjoyed drinking water from a piece of broken crock. My earlier days were passed in the vicinity of shops where crockery was made; and all around Mogadore, Summit Co., O., as every one knows who has been there, there are springs of soft water gushing from the sandy and gravelly hillsides. These drinking utensils of broken crockery were usually left in the spring; and the stone surface, as one presses it

to his lips, is deliciously cooling. Now, this fragment of crockery that we found in that cave, even though it held only about half a teacupful, seemed to me to furnish about the most delicious beverage that it has ever been my pleasure to taste; and I rather think the boys thought so too by the way they kept passing the dish from one to the other. Pretty soon there was a hurrah as the lantern was passed in.

"Now pass along your matches," said I. But the reply came,—

"Why, I have got some matches, as I said; but they are in my coat pocket."

In the scramble through the woods the boys had taken off their coats.

"All right; but where is the coat, Johnny?" said I.

"The coat? Oh! that is hanging up on the tree over there where we took dinner. Don't you know, Mr. Root, you urged us—every one of us—to take off our coats and hang them up before we started out?"

There was a big laugh all around at this. Wasn't that an excellent specimen of boy logic? And here was a predicament. Here we were, a pretty fair-sized Sunday-school, crowded into the dark cave with a *lantern*, it is true, but "nary a match." Another boy was sent off to get some matches; but by this time I was a little impatient about the delay as well as the rest; so I told the boys that those who were barefooted might push out in the dark, providing they were very careful not to slip or fall, or get out of hearing distance. In fact, I kept talking to them as they crowded back and explored the various crevices and openings through the white sandstone. Sometimes the passage went down quite steep, and again we had to climb up; but before the lantern reached us we had explored every passage except one. Pretty soon somebody sang out, "Light is coming!" and then we made the cavern ring and echo again with our hurrahs for a real *lantern* with a burning *light* inside. After the whole crowd had pushed off up into one of the passages where it was dry, the music-teacher struck up

"Rock of Ages, cleft for me!"

and, wasn't it grand! Then we took another drink from the broken crock; but I stayed after all the rest, dishing up the water; but even then I did not get enough. I am going some day to that cave again, and you may be sure I shall have a tin cup large enough so that I can drink to my heart's content from the cooling and life-giving waters.

After we emerged from the cave, in order to make a short cut to the dining-place we ascended an immense hill. It is, perhaps, one of the longest hills in Medina Co.; and when we reached the top we were rewarded by a most magnificent view. On the north and west was the valley of the Rocky River, with its green hills and beautiful farms dotting the hillsides. On the south was the valley of the River Styx, and so on clear around on all points of the compass. I told the boys that "down east" the Boston folks call themselves the "Hub of the Universe;" but it seemed as if this hill was ahead of Boston. At a farmhouse, right on the summit, our pilot informed us there was a well over 100 feet deep, cut full size clear down through the solid sandstone. It was made years ago, before bored wells were much known. Two buckets were arranged on a chain, to bring the cool and sparkling liquid from the lower depths; and it took a pretty good boy to pull the bucket with its weight of chain when it first started up. Our small tin cup had been brought to light; but as there seemed but little

prospect, by the way things were going, that they would get around much before night, I went over to the well to interview proceedings. One boy had the small cup; and while his thirsty companions looked on with envy he took sufficient time to drink *three* cupfuls. Near by were some stone milk-crocks. They were of the kind that are white on the outside and black inside. This black glazing has a shiny, sparkling appearance; and whenever I see a piece of crock of this kind it always makes me thirsty, because it is the kind they used to make in Mogadore—the very kind we used to have around those springs. I took out one of the smallest milk-crocks and poured it full, and then passed it from one boyish face to another, telling them meanwhile that this water was not only the purest and coolest and most delicious in the world, but very likely it came from one of the deepest wells in Medina Co. Well, pretty soon I found that even the tin cup with the help of the gallon crock was not going to furnish water as fast as they could drink; so I borrowed another crock and put a stout boy at the windlass; and then when a party of ladies came up I borrowed *still* another crock; and, oh! but didn't we have fun drinking that cool spring—no, no!—not *spring*, but *well* water, pulled to the surface with two veritable "old oaken buckets!"

Now, friends, I am making quite a long story in order to make my point. I am sure those children, as well as myself, enjoyed that pure soft water more than they would have enjoyed any kind of beer, soda-water, or even lemonade, and a thousand times more than they could have enjoyed any intoxicating drink. And if my story has made you thirsty for just such pure spring water, then I have accomplished my end. In climbing hills and taking such rambles as this, I believe almost every one can drink freely of such pure soft water, provided he keeps on climbing. Were one to drink to excess, perhaps, *after* such a tramp, and then sit down or lie down, the consequences might be unpleasant; but I am sure not at all so if he keeps on with his ramble. Another thing, I am quite certain that there are few people who can drink hard water, or water impregnated with any mineral substances, as they can soft water from these sandstone rocks. Again, I have told you many times before that such rambles and such great quantities of pure water are, to my mind, one of the best medicines for old and young that this world affords. Perhaps there are those in strong and robust health who take water from hard-water wells and springs just as well as the pure soft water; but I am sure it is not so with those whose health is poor. In my various wheel-rides through the northern part of the State of Ohio I have learned to my sorrow that it will not do for me to drink freely of hard water; and so many others agree with me, that I do think better provision should be made for furnishing soft water to people who can not drink the other. In old times the man who dug a well for the convenience of the people was considered a public benefactor. You remember what the Bible says about the well that Jacob dug; and in one of our texts we are told that Isaac's servants found, by digging, a well of springing water. The margin calls it a well of "living" water. Now, we want ever so many more of these. Our temperance people have done a little, but they want to do a big lot more. At the present writing I do not know of a real nice soft-water spring within less than six miles of where I now sit; but when I have plenty of time I just enjoy going that distance on my wheel in order to enjoy the fun of drinking cupful after cupful of this delicious life-giving beverage. The spring is in a shady nook

in the woods. It is back perhaps 40 rods from the road, and there is a sufficient volume of water to run a hydraulic ram, and send it clear up to the roadside; but it has never been done. The man, who lives right opposite the spring, has been drawing water with wagon and barrels, day after day and week after week, to put around his plum-trees and blackberries. His crop of plums was sold for several hundred dollars, and, without doubt, paid him well for drawing water in barrels. But an expenditure of about \$50.00 would send the water of this spring right up before his door and into his house. There are thousands and thousands of places throughout our land where soft-water springs may be thus utilized. Of course, here and there we find a person who has done it. Our State of Ohio, some years ago, offered a little by way of encouragement, but nobody seems to have taken advantage of it very much.

The watering-troughs by the roadside, kept full and running over by means of a pipe from a spring on a little higher ground, are mostly in the hands of some person who has done it at his own expense, just because he happened to be "built that way." May God grant that more and more people may be built after that fashion!

I know, by talking with other people, that there are others like myself who are hungering and thirsting for pure drinking-water. We have scores of people whose digestion is weak, and whose stomachs seem to be fastidious about water. If it has a woody taste from the wooden pump, or a limy taste from the cistern, or a rooky taste from the wooden roof, it stirs up an unpleasant feeling in the digestive apparatus. Sometimes I have thought it was a notion. Again, I have thought that Nature knew what she wanted, and that the craving was a right and proper one. Many times I have set a crock out in the rain, and enjoyed hugely drinking the pure water right from the clouds, to my heart's content; but nothing else to be found at any of the wells and cisterns in the neighborhood would fill the bill. I told you that the nearest real nice spring I knew of to where I write is six miles away. Is there no other way than to go all this distance for the delicious soft spring water I love so well? Yes, I can have it stored up in clean crocks or jugs, and kept in the cooler. But there are two difficulties here. One is, the water that has been standing is not nearly as good as that fresh from a spring. It may be that it lacks air, and of this I shall speak further on. It is also very apt to become tainted from the cooler. It may be fastidiousness, and notion, you may say. It may be so, and may be not. But the principal attraction that the spring six miles away has, is that a six-mile ride puts me in just the trim to enjoy a drink of spring water. But, wait a little.

Last week, after riding 25 miles it was my great privilege to spend a few hours with one of the Oberlin professors. All round about Oberlin they have hard well water. I tasted the water from the waterworks; but that, too, contained chemicals that I knew would not be safe for me to take. I had been threatened with a fever; and only one who has been there can tell how I longed for some of the pure clear spring water. Now, I have learned by practice to tell by the looks whether the water is hard or soft. Hard water has more or less of a bluish tinge, as seen through a tumbler. Another thing, in hot dry weather it will begin to evaporate around the edges very quickly, and show a faint chalky incrustation. As we sat at the table I noticed a glass of water near me that looked exactly like the spring water I craved. The tumbler was very thin, and the material of it was remarkably clear. I felt so sure that

I was right, that, as I took the glass in my hand, I said, "This is filtered rain water, is it not?" My hostess smiled and nodded. It was perfect—just as good as that from my favorite springs. Then we commenced talking about the difficulty of keeping it, even in the cooler. Then she mentioned an experience which has been much like our own. She said that, one day, she wished to keep a pailful, and thought that, if she pressed down the tightly fitting tin cover, it certainly could get no taint from the contents of the refrigerator. A ripe muskmelon was part of said contents. A few hours afterward, on tasting of the contents of the tin pail it was so flavored with muskmelon that it could not be used. On this account it seems best to filter the water only about as fast as you will want it for use.

Ernest and John have each just completed a nice cistern holding about 50 barrels. Their buildings are covered with slate. The water from only half of the roof has heretofore been used. These new cisterns are to be filled from the other half; but after they have been emptied and filled a great many times, in order to remove the limy taste from the water, they are to be filled up each winter some time during a long rain, and when the weather is as near the freezing-point as possible. After that, no summer rains are to be allowed to go into them at all. This fifty barrels of ice-cold water is supposed to be enough to furnish drinking-water through the season, and it is to stay cold and pure; but it is to be filtered as wanted. I believe this is the only safe way. The delicious springs I have told you about are filtered through great coarse sand rocks. If you put coarse building-sandstone near the well in a dry time you will find that you can pour pailful after pailful of water on it; and if you put it on slowly it will soak it all up. It is like a sponge. Well, a trough made of this porous stone would make a very nice filter, but the water would be a long while in getting through it.

I suppose there is no end of filters in the market; but we are just now using one with great satisfaction, illustrated in the cut.

You will notice in the picture a filter-disk. This is made of a certain kind of natural stone. The whole thing is made of the same kind of stone crockery I have mentioned as being such a nice thing for drinking-utensils. You lift off the stone cover, and pour the water in at the top. It drips slowly through the disk. There are several sizes. The smallest size will filter about 4 gallons a day; the largest, about 12 gallons. You may take water that you consider very nice and clear; but place two clear glasses side by side, one filled with filtered water and the other with unfiltered, and you will see a difference very quickly. Again, you may have some water that you consider remarkably pure, and think it is good enough. Brush off the stone surface and wash it clean. Now run through, say, a gallon of your nice pure water. The deposit left upon the surface of the stone will startle you. The pores through the stone, while they are open enough to admit water, are so close that I feel sure they will strain out every particle of vegetable or animal life that so quickly develops and grows in most kinds of water during warm weather. This is one reason why I think the water should be filtered just before it is used. This stone diaphragm is perhaps a little thicker than roofing-slate. It rests in a channel, and is fastened around the edges with cement. If it gets broken or worn out, it can be replaced. It should be cleaned every day; and if the water is very impure, twice a day. By lifting off the top and taking a little brush you can wash the stone in a very few minutes. A common whisk broom answers

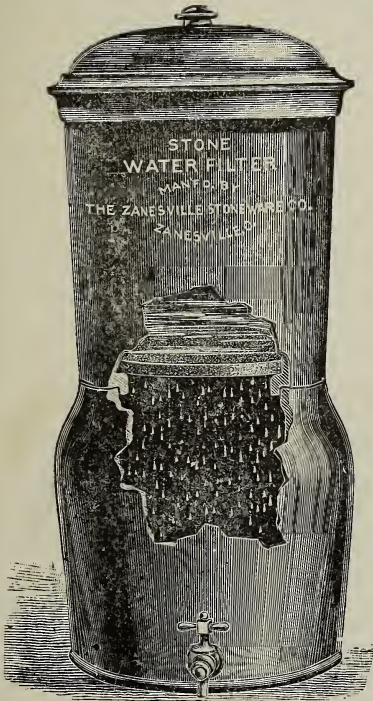
very well to wash it. There has been some dispute as to whether such a filter would entirely remove the germs of typhoid fever, cholera, diphtheria, etc. I am not prepared to state *positively* that it will do so; but if the water is first boiled and then filtered, I believe it is *absolutely* safe. One objection to boiling is, that it expels the air and gives the water a

water for drinking-water as any *hard* water I ever saw or tasted.

It is well known, and has been abundantly proven by experiment, that the water of any well or spring, to be nice, must be constantly running water. If a spring is dammed up so that there is not sufficient force to overflow the obstruction, the water becomes dead and stagnant. Open it out and let it run, and keep the channel clear, and it will soon become clear and pure. It is so with the well. In order to have water nice, you want to keep drawing on the supply constantly. The more water there is drawn out, the better will the water be that is obtained. This illustrates the beautiful text—"Give, and it shall be given unto you." Fix your well so that all your neighbors can take water from it, and you help *yourself* as well as them. A family once had two wells. One was near the house, and the other was off near the barn. Everybody agreed, however, that the water near the barn was so much nicer than that near the house, that they carried all their drinking-water from the barn well, even though it made quite a little more labor. Finally the pump was broken, and they were obliged to use the water from the house well, close by the door, not only for drinking-water for the family, but to water the *horses* also. When the pump was finally fixed, lo and behold! the water at the house well was *good*, and that near the barn *bad*. All that was needed to make one well better than the other was to let *all the horses* drink from it. Don't you see?

In the city, I suppose wells for drinking-water are wisely ruled out; but in the country and country towns they are probably the thing for most of us—that is, because most people do not object to hard water, as I have described; but I would use filters, especially during the hot months when fevers and like maladies prevail. I think, also, that every farmhouse should have its ice-house. It has been proven that blocks of ice, even after freezing, on a pond of *impure* water, are not wholly free from germs of disease. I myself have tasted water cooled from lumps of ice, where the ice was so bad that it would make me sick to drink the water. Freezing is a remedy for certain forms of impurity, but not all. Therefore, if you wish to drink ice water, put the ice in the upper chamber of the filter, and have the water from the ice filtered as well as the other. Of course, it may not be as cold as if the ice were put into the lower receptacle, but I am sure it will be cold enough.

Recent investigations seem to show that the fevers that afflict us are more due to the water we drink than to any other one cause. At our Ohio Experiment Station, two members of a family were sick with malarial fever. Investigation made it quite probable that the fevers were caused by the water from the well. The family moved into another house, simply because of the bad state of the water. With these facts before us, it seems to me there is hardly any other one thing about our homes that so urgently demands the most careful attention as the water we drink. You may say filters and such carefully constructed cisterns as I have described are a good deal of expense and bother. My friend, the typhoid or malarial fever is a *hundred times* more expensive and bother; and think what your feelings must be—think of the remorse that would probably follow you through life if a loved one should be taken away—possibly the mother of the family, just because you had been negligent or careless in regard to this one matter—the water we drink. Then, again, please bear in mind that in no way in the world can you show forth Christ's spirit and teaching to better advantage than in providing plenty of good water for the commu-



flattish taste. To remedy this, various devices have been brought forward to aerate drinking-water. One of these is a pump for a cistern or a well, that carries as much air down under the water as it brings water up. After having had quite a few jangles and discords in regard to drinking-water for our factory hands, we finally dug a well some little distance away from the buildings. We reached water at about 30 feet, just where we struck the rock. Sections of sewer-pipe, 2 feet across, were then used to curb the sides, cementing each joint with water-lime cement until we came to the top. All the earth taken out of the well was banked around the outside, so as to make a strong slope away from the stone-pipe curbing. This was pounded down so as to prevent, absolutely, any surface water from getting through into the well, even during the very wettest weather and heaviest rains. Then we put in an aerating pump, manufactured by the Van Nett Water-purifier Co., Tiffin, O. Of course, the water is hard; but ever since that pump has been in place I have not heard of a single instance of any one of our hands going to the neighbors for water because they had a notion that it was better than our own. I am quite satisfied that this aerating pump gives the water a peculiar clearness and purity. The claim is, that the quantity of oxygen carried down into the water by the buckets oxydizes or decomposes all organic matter, so as to keep the water pure and wholesome. I don't know whether this is sound logic or not. I give it to you as it came to me. I think this is as nice

nity about you. The last day of our county fair, the horses and people drank, probably, a hundred barrels of water from our stone trough in front of the store. There was a brisk wind, and the big windmill did its best all day long in bringing water right from the bottom of the well. But the people took it so fast it made almost a constant stream. The well out in the apary, that aerates the water, was also kept going pretty nearly to its fullest extent. Neither of the wells, however, gave out.

Now let me close with a little text which it seems to me may be taken in a temporal sense also, as well as spiritual:

And whosoever shall give to drink unto one of these little ones a cup of cold water only, in the name of a disciple, verily I say unto you, he shall in no wise lose his reward.

HIGH-PRESSURE GARDENING.

BY A. I. ROOT.

SEEDS THAT MAY BE SOWN IN THE MIDDLE OF SEPTEMBER.

In most northern localities it is just about the time you want to sow your seeds for cold-frame cabbage-plants. Go to work just as you would to get cabbage-plants in the spring. When they are of just a nice size to transplant, put them into beds that can be covered with sash. Plant them down much deeper than usual—in fact, clear down to the first leaf, or a little more. Give them room enough so they can make good strong stocky plants, say two inches apart in the row, and the rows three inches from each other. Have the ground rich, then use your sash in such a way as to harden them gradually, but protecting them with sash when the weather is most severe. Onions, spinach, cauliflower, and many other hardy plants and vegetables, may be kept over in cold-frames in just this way; and my opinion is just now, especially after the experience of last spring, that such cold-frame plants are worth more—at least generally speaking—than any plants you can possibly raise in the greenhouse or hot-bed. Now is the time, also, to sow spinach. Get it large enough to use before severe weather comes, if you can. The larger it is without going to seed, the better, and it will frequently winter away into February or March without any protection at all. Of course, much depends upon the quantity of snow on the ground when we have our most severe freezes. A little help from sashes will make your spinach much nicer and safer. Last year we got 10 cts. per lb. for outdoor spinach, and 20 for that raised under glass; the same with winter kale. You want the ground exceedingly rich for all these winter plants. Grand Rapids lettuce should be sown now so as to get nice plants to transplant into the greenhouse or into cold-frames or hot-beds. It is managed very much as we manage cold-frame cabbage-plants, only you want some bottom heat if you want to make it mature in the winter time. The best lettuce we raised last spring was wintered over in a cold-frame without any bottom heat at all. It looked as though the life was frozen out of it along in March; but after the sun had warmed the ground up enough to give it a start, it took hold and grew amazingly. It takes but very little time or ground to grow the seed; and if you should raise more plants than you need, it will not be a very big loss. If, however, you and everybody else happen to be short of plants, as it was last spring, it will be a very big gain, and a nice speculation, to have a lot of nice ones. If you already own the sashes, why not make

them earn something in the latter part of the winter as well as in the fore part? Ours are now nicely covered up, by cases or boxes, and have been so all summer long; but as soon as the first severe frosts come, we expect to have them newly painted and utilized, every one of the 300, by having them covering cabbage-plants, cauliflower-plants, onion-plants, kale-plants, little beets that started to grow before the warm weather was quite gone, etc. Nice vegetables out of season will almost always find a purchaser, especially when it gets to be understood that there is something nice and good to be seen and purchased at your garden every month in the year.

SOMETHING ABOUT LOOSE WAGON-TIRES.

During every dry time, like the season we have just been passing through, for instance, there is always more or less trouble about wagon-tires getting loose; and, with a careless driver, tires have been run off, and expensive breakdowns are the result. Where one watches his tires, however, he will notice quickly when they are getting out of place. The usual method of getting them back again is to get a hammer or a stone, and pound the felly or the tire. If you have tried it, you know it is very unsatisfactory, besides bruising up your wheel. An hour or two ago a man showed me a neat trick. It was this: When your tire gets to slipping off the felly, get a common adjustable wrench—a pretty good-sized one. Open it so while one jaw rests on the edge of the tire the other is against the felly. Now bear down on the handle, or raise up, as the case may be, and one jaw will crowd the tire forward while the other pushes the felly back under it. In a few minutes you can get all of the tires exactly over the felly, where they should be. Now wet your wheel, and the tires will stay in place until the wood becomes very dry again. A few years ago I was greatly taken up with the idea of soaking the wood with linseed oil—boiling hot. I bought the machine, and carefully went over every wheeled vehicle on the premises. Perhaps it did some good; but my opinion is, that, had I expended the same amount of money by sending the wheels to a skillful wagon-maker, I should have been better off. Later yet, somebody talked about putting a washer of leather between the end of the spoke and the felly. I spent some more money in having a man go over the wheels in this way; but my decision is as above, "Every man to his trade." A good wagon-maker or wagon-repairer who has carefully watched all of these things for years, and made it his study to see how he can do his customers the most good for the smallest amount of money, would be cheaper in the end than the plans I have mentioned. If, however, you have leisure time at odd spells, or during bad weather, it may make a difference. Whenever I wish to do such work I have to hire a man at \$1.25 or \$1.50 a day, and we usually have plenty of indoor work for all of our help during bad weather. Whatever you do, don't let your wheels go without having the tires properly set, being properly painted as often as they need it, etc. A stitch in time certainly saves nine in the care of wheels of vehicles.

ONLY 44 CENTS FOR WHEAT, AFTER HAULING IT 17 MILES.

Friend Root:—Find inclosed one dollar at last. They are hard to get now, with wheat at 44 cts. a bushel, and 17 miles to haul it. A tremendous drouth has cut all other crops short, honey included; but I don't see how I can get along without GLEANINGS. I have read it for 16 years, and should be lost without it. Give

us lots of high-pressure gardening. Home talks, and other things of a like nature.

I can make a reservoir to hold 60,000 barrels. How much ground will that irrigate? How large an outlet will it take to let the water on the ground?

My six-year-old bee-man wants to know if that roaring in the apiary is bees snoring in their sleep.

J. T. SHUMARD.

Golden, Mo., Sept. 4.

[Friend S., 44 cts. for wheat is rather lower than any price I have heard of yet. Now, if other crops are cut off, wheat is certainly going to be in better demand before long; and if it can possibly be kept, I would not be in a hurry to sell it. Thanks for your kind words.]

During a season like the present, I have estimated that it needs a reservoir of about 2000 barrels for a quarter of an acre—that is, where we depend upon a windmill; and if your purpose is to store rain water when it comes, you should have perhaps even more than that. According to the above, your reservoir would be sufficient for only about 15 acres; but, of course, all these figures must be very indefinite with the various circumstances that will affect each case. I should say the outlet would need to be a pipe from one to two inches in diameter; but here, again, much depends upon the head of water, the porosity of the soil, the slope of the land, etc. If you are going to run your water in ditches through your ground, you must let on water enough to go from one end of the ditch to the other. If your stream is too small it will all soak into the ground before it gets from one end of the lot to the other.

Your six-year-old bee-man is not so very far out of the way, perhaps; but I would suggest to him that, instead of snoring in their sleep, they are simply purring like kittens, because they are happy. After the bees have brought in a great lot of honey during the day you will hear this contented roar at the entrance of the hives. It has been suggested that roaring is caused by the effort they make to evaporate the surplus moisture in the new honey. My opinion is, however, that, inasmuch as bees express themselves by the humming of their wings, this peculiar sound you speak of is also a note of contentment, as I said before; and who can say that it is not a way they have to express thanksgiving and praise to the great Father above, who gave them life and being? Very likely they have no conception of God; but I think that they, in common with other animals, have a way of expressing gratitude and thanksgiving, nevertheless.] A. I. R.

MUSHROOM SPAWN THAT WILL NOT GROW.

On page 536 we published a letter complaining of our mushroom spawn, and also acknowledged that it came from Johnson & Stokes. Again, on page 611 E. C. Green, of our Ohio Experiment Station, says Johnson & Stokes are not alone in the matter, etc. Well, just now here comes a later report from friend Bartow, as follows:

Mr. Root:—I take it all back. Some of the mushrooms have grown. The first I gathered to-day were planted as soon as I gathered them.

Milan, O., Aug. 30.

ALLEN BARTOW.

Friend B., I am exceedingly obliged to you for letting us know so promptly that the fault is not entirely in the spawn, after all. I have seen this same thing so many times that I begin to suspect that, after one has given up that the plant will grow, it is pretty sure to come up after all, providing temperature, moisture, and other conditions happen to be just to its notion.

Our own has not started yet, but I am watching every day to see it do so.

"LEE'S FAVORITE" POTATOES.

I have for the last 20 years experimented more or less with potatoes, and in that time I have tried all the new and popular varieties as they came along, and I must say that, in all my experience, I have never had a variety that could come up to Lee's Favorite. This season I planted Lee's Favorite. New Queen, Early Sunrise, Crown Jewel, Charles Downing, and a few more varieties, and I shall abandon all, and stick to Lee's Favorite. New Queen, and the good old Early Rose. With these three sorts, planting one or two eyes in a place, in drills 15 inches apart in the drill, level culture, and, in dry weather, by keeping the cultivator running, I can raise lots of beautiful potatoes on a small area of ground. The Rural New-Yorker is the worst potato to rot, with me, of any I have tried. Lee's Favorite is the least subject to rot of all I have tried; in fact, I do not remember of ever seeing a rotten one of this variety.

N. F. BOOMHOWER.

Gallupville, N. Y., Aug. 21.

CONVENTION NOTICES.

The Susquehanna Co. Bee-keepers' Association will meet at Jay's Hotel, in New Milford, on Thursday, Oct. 12, at 10 A.M. All are cordially invited.

H. M. SEELYE, Harford, Pa.

THE COLUMBIAN MEETING OF THE BEE-KEEPERS OF NORTH AMERICA.

The North American Bee-keepers' Association will hold its 24th annual convention on the 11th, 12th, and 13th of October, 1893, in Chicago, Ill.

PLACE OF MEETING.—A hall for the use of the convention has been secured in the "Louisiana Hotel," at the corner of 71st Street and Seipp Avenue, only a few minutes' walk from the south entrance to the World's Columbian Exposition. This hall is large, well lighted, and in a quiet place.

HOTEL ACCOMMODATIONS.—The Louisiana Hotel itself will furnish comfortable accommodations to a large number of the members, at very moderate prices. For a small room two persons pay daily 75 cts. each. Larger rooms occupied by two at \$1.00 per person. Four persons occupying a room having two beds will pay 50 cts. each. Meals can be obtained in the hotel at reasonable rates, or at numerous restaurants in the vicinity. It is best to engage rooms by letter beforehand. The proprietors of the Louisiana Hotel give us the use of the hall free, expecting that many of the members will take rooms with them; and as the prices are moderate, and the rooms are neat and comfortable, it is but just for all who can to arrange to stop there to do so. For this purpose, address "Manager of Louisiana Hotel, corner 71st Street and Seipp Ave., Chicago," stating what priced room is wanted.

RAILWAY TICKETS AND BAGGAGE.—Most of the railways ticket to the Exposition Depot, near which the Louisiana Hotel is located; and baggage should be checked to that station, thus avoiding extra charges, as it is about seven miles from the city stations to the World's Fair grounds. Information as to rates of travel, time tickets are good, etc., can be obtained from all local ticket agents. From many points—especially from cities having numerous competing lines—excursions will be starting which will permit those who can take advantage of them to go and return at the usual rate for one fare.

PROGRAMME AND ATTENDANCE.—The programme, of which further notice will be given, consists of interesting papers by well-known specialists and discussions of topics which will interest honey-producers, queen-breeders, manufacturers of apianian supplies, publishers and editors of bee-literature, and dealers in honey and wax. Viewing the various foreign and home exhibits in apiculture at the World's Fair will form an attractive and instructive feature of the meeting; and the number of apiarists widely known here and abroad who will be present and take part in the proceedings is of itself a guarantee that this will be a highly interesting and enthusiastic meeting. Counting, therefore, upon a large attendance, the Executive Committee of the society has made arrangements accordingly. Let every State in the Union send the strongest possible delegation, and let every branch of our industry be represented at this great Columbian gathering. No other occasion is likely to occur in our generation when so much of interest can be seen and heard at the time of one of these meetings; and it is earnestly hoped that a much larger number of the bee-keepers of North America than has ever met at any previous convention will be able to avail themselves of this grand opportunity. A special invitation is extended to the bee-keepers of every foreign country.

NOTICE OF ATTENDANCE OR OF PRESENTATION OF PAPERS.—The Secretary is desirous of obtaining, as early as possible, the names of all who contemplate being present. Kindly notify him by card or letter; also any who may wish to present papers, the titles of which have not yet been handed in, are requested to send to the Secretary at as early a date as possible the exact title and a very brief abstract of the article, which will enable him to assign the topic its proper place in the programme.

FRANK BENTON,

Secretary North American Bee-keepers' Association,
U. S. Department of Agriculture, Washington, D. C.



The woman saith unto him, Sir, thou hast nothing to draw with, and the well is deep; from whence then hast thou that living water? Art thou greater than our father Jacob, which gave us the well, and drank thereof himself, and his children, and his cattle?—JOHN 4: 11, 12.

THE second number of the new series of the *Candian Bee Journal* shows further evidence of improvement.

LAST week we sent a consignment of 40 queens by mail to Australia. Of the 50 we sent some months ago in a previous consignment, only three or four have been reported dead; the rest we have not heard from as yet.

WE regret to learn, through the *Illustrated Home Journal*, that C. P. Dadant, the foundation-maker, has been down for several weeks with the typhoid fever; but as he is now convalescent we hope he will soon be himself again.

So far the indications show that there will be a very light crop of fall honey. A very little yield is reported from buckwheat. The honey on the market will be almost entirely of the light order, made up of California honey: and in the East, clover.

N. F. BOOMHOWER, an extensive and practical apiarist, gives in another column, quite incidentally, some facts that strongly support our position that swarms unaccompanied with queens do not unite, and that those with queens do quite the contrary, or did do so in the instances he records.

THE *Australian Bee Bulletin* is a monthly bee-journal that has been coming to our desk for a few months back. Up till recently the Australian bee-journals have had a rather hard pull to maintain an existence; but the above seems to be going on with flying colors, and gives every evidence of long life.

THERE, we are all at sea again. Hasty, in the leading article in this issue, has given a batch of statistics that leaves us without any rule. But say, friend H., if we succeed in cutting out all queen-cells in five days, and again in five days more, as explained in Dr. Miller's Straw, won't that stop second swarms? Or is it a fact that second swarms *may* come out, cells or no cells?

IN our last issue the Reports *Discouraging* rather overbalanced the Reports *Encouraging*. In this issue we have *no* Reports *Encouraging*, but quite a batch of the other kind. Yes, indeed, there will be a good demand for all the crop of white-clover honey, and prices ought to be good. As soon as fresh fruit is off the market, the demand for honey will begin to increase.

IN our last issue, on page 687, an omission occurs in the fifth line from the bottom of the last column that almost destroys the full force of the editorial. The sentence should read: "We stowed these [the combs] away until *after* the honey-flow, when they were put in tiers of four or five hives." The important thing omitted is the word "*after*." It is easy enough to stop robbing *during* the honey-flow; but the point we wanted to make was, that we could stop it *after* the honey-flow.

WE have never taken very much stock in drug remedies for curing foul brood; and after

having made several experiments with them we are less in favor of them than we were at first; but naphthaline is suggested in the *British Bee Journal* as being a very efficient remedy; and we suggest to R. L. Taylor, the experimenter at the Michigan Agricultural Station, the wisdom of testing this remedy. Mr. Taylor has had considerable experience in handling foul brood, and it would be far cheaper for him to test it than for several bee-keepers to trouble with it, with the possibility of its failing to cure.

ONE of our correspondents, Mr. S. B. Kimmell, of Diamante, Cal., writes:

The estimate for Southern California is about 500 tons; but prices for extracted honey are quite low—4 cts. per pound is all that is offered, and buyers are scarce on account of the money crisis at this time. But honey can be raised with a profit at this price here in any fairly good season.

Samples of California honey, so far as we have tested them (and samples have been sent us from scores of bee-keepers), show that the crop is unusually fine—light in color, and very heavy in body, and the flavor unusually pleasant.

WE notice in the *Illustrated Home Journal*, of which Thomas G. Newman, formerly editor of the *American Bee Journal*, is editor, a department entitled "Apicultural." It is a pleasure to read again bee editorials from the "Old Roman;" we are very glad indeed to hear of his improved health. In answer to some inquiry as to why he did not have an exhibit at the World's Fair, Mr. Newman says:

Early in the season for preparation, Bro. Root wrote, asking if I would make an exhibit, and suggesting that we had some one in common to look after both. I had then another attack of la grippe which left me without ambition enough to undertake it, and I replied that I hoped to be in heaven long before the fair materialized, and should not attempt to make a display. But since then my health has improved and I am still here to see the Fair and be seen, and now hope to put in an appearance at the National Convention next month.

MAY we suggest to those who have papers or essays to be read at the convention, to bring or send extra copies for the use of the bee-journals and the reporters of the regular newspapers? At almost every convention we have attended, there has been more or less confusion or bother because there has been only one copy of a paper. A reporter of one of the daily papers would borrow it to make a brief résumé of it. It may get lost; and if returned, and several bee-journal editors want a copy of it, there is apt to be no little trouble in "getting it all around." Indeed, when the report of the last Washington convention was made, single copies of the different papers that were read at the convention were scattered among the different bee-journal editors; and it was no little trouble for the reporter, Mr. Hutchinson, to get them all together so that they could be put into the official report. We hope the essayists will bear this in mind. If you do not care to go to the trouble of making extra copies, get some member of your family to do it for you. If you use a typewriter, extra copies can be made as easily and conveniently as one. Now, all of this is said in the interest of accurate and careful reports.

GIVING UP A GOOD THING TOO HASTILY.

WE have all seen instances of the folly of testing *every* new thing as soon as it is barely mentioned. On the other hand, we have seen the folly of *rejecting* many of these new things before they were fairly tested. We at first rejected the Boardman solar wax-extractor at

our apiary; but we have since learned that the first extractor was not properly tested. We now find the machine to be a most magnificent success, and it actually earns more dollars than any thing else we have put in the apiary for a long while. There was a time when fixed frames, or, more correctly speaking, self-spacing frames, were regarded as nuisances, and impracticable, and all this because they were not candidly and carefully tested; but now the whole bee-keeping world is adopting them right and left, in some form or other; and the evidence seems to show that they have come to stay. Now, is there not any danger that a few of us may decide against the self-hivers and the Langdon non-swarmers before they have been fairly tested. We are satisfied that the Pratt hiver is a success. At first we were not favorably impressed with any form of hiver; and some preliminary tests that we have made, as well as some reports that come in, led us to believe they never would be practicable; but more careful tests convinced us to the contrary. In this issue we give the report of one who has tested the Langdon non-swarmers, and found it to be fairly successful. Let us not throw aside something hastily, that may prove to be of great value. There is no use in scoring the editors of bee-journals because they give prominence to something that may prove to be a failure. Let the watchword be, "Prove all things and hold fast that which is good." But in order to do the proving we must give the bee-keeping world a chance to "prove."

THE AMERICAN COFFEE-BERRY.

AFTER publishing what we did on page 639, we are told that the American coffee-berry is advertised by Samuel Wilson, of Mechanicsburg, Pa. It was also my pleasure a few days ago to see it growing on the grounds of our experiment station at Wooster, O. If you will turn back to page 639 you will notice that the *Rural New-Yorker* says: "The 'American' part of it is the cheek of the 'introducer' who calls it a new thing, and wants to charge ten times what it is worth." In Wilson's catalogue it is called "Cole's Domestic coffee-berry." An exaggerated picture is given, and a tremendous puff, with several testimonials from those who have used the coffee. Then follows the offer of 25 cts. a packet, or five packets for a dollar. It is true, the plant is exceedingly prolific, for it is one of the soy-bean family, and the seeds could be sold for five cents a packet, and good-sized packets at that. I have tested the coffee, but I should say it could not be compared with even the poorest grades of coffee. It might, however, prove more healthful and nutritious; for, while beans are a most nutritious food, they are in no sense a stimulant. I do not know that anybody would be very much harmed by investing, only that it seems too bad, when money is so hard to get hold of, to be asked to pay 25 cts. for a small package of beans; and, by the way, I do not think I ever saw any thing in the whole range of the bean family, where there are so many pods on a single plant. As the beans are small, however, we probably shall not get so many bushels per acre, after all.

Just a word right here in regard to exaggerated pictures and exaggerated recommendations in our seed catalogues. We should hardly want to call the seedsman a humbug or swindler; but if he persists in thus booming every thing he catalogues, his customers will most surely begin to calculate each spring, as the seed catalogue comes out, that it will not be safe to believe more than a small part of what the pictures and description claim. A. I. R.

PERFORATED ZINC; IS IT POSSIBLE TO MAKE A ZINC THAT WILL EXCLUDE ALL QUEENS, INCLUDING VIRGINS. AND YET ALLOW THE WORKERS TO PASS FREELY WHEN LOADED?

WHEN perforated zinc was first introduced into this country, it had perforations very nearly $\frac{1}{100}$ of an inch wide; but it was soon discovered by us and others that queens would go through it; and, not being able to buy zinc with perforations $\frac{1}{100}$ wide, we constructed an automatic machine for punching the metal in large quantities; but ere long, when this zinc was introduced among bee-keepers, it was discovered that queens would occasionally get through this. About this time, Dr. G. L. Tinker, of New Philadelphia, O., made perforated zinc $\frac{1}{100}$ wide. From numerous experiments he had made, he concluded that this size was correct; that it did not hinder loaded workers in passing through it, but always excluded queens. This size was generally accepted as correct. We then made an entirely new machine, and a new set of dies that made zinc $\frac{1}{100}$ inch wide; but by a slight miscalculation the dies were a trifle larger than $\frac{1}{100}$, and again queens were reported as going through. Two years ago we made zinc a trifle scant $\frac{1}{100}$, thinking that this time we should make a sure thing of it; but in the course of time, reports would come in that virgins and sometimes laying queens would go through this very zinc; and Dr. Miller himself wrote us that he had almost despaired of getting a perforated metal that would absolutely exclude the queens. We said nothing about it in print, but concluded that our dies must have worn since they were first made, because we have turned out the metal during the past few years by the ton. We were about to set our machinist to making new dies, when it occurred to us to make some careful measurements. One of our men has a micrometer that will record the one thousandth part of an inch. We first measured Dr. Tinker's zinc, and found this to show exactly $\frac{1}{100}$ as its width. The Chicago zinc showed a measurement of $\frac{1}{100}$. As we heard good reports from Dr. Tinker's, we naturally concluded that our zinc was something over $\frac{1}{100}$, or, at least, larger than Dr. Tinker's. To our great surprise, we found that the holes measured only $\frac{1}{100}$. Three of the holes showed nearly $\frac{1}{100}$; but all of the rest of the holes in that die of 64 holes showed a measurement of $\frac{1}{100}$ and under, though none recorded less than $\frac{1}{100}$. We concluded that Dr. Miller and others who reported queens going through our zinc, must, by some mistake, have gotten some of our old zinc. We accordingly wrote to Dr. M., asking him to send us some of the zinc from the honey-board through which the queens went. As Dr. Miller's hives are all numbered, and records are kept in a note-book by number, he had no difficulty in going to the identical honey-board through which, he knew positively, his queens had gone. He forwarded us the zinc, and, by actual measurements, we found it to be — what do you think? Exactly $\frac{1}{100}$! Now, by some very careful and elaborate experiments that we made in our apiary we have found that zinc as small as the Chicago, having perforations only $\frac{1}{100}$, hinders greatly the workers, when loaded, from going through. Indeed, there were large numbers of the bees that could not pass through at all. We then and there concluded that such zinc would never do for the passage of loaded bees. Well, now, zinc as small as $\frac{1}{100}$ is as small as we dare go; so we must naturally conclude that there is, perhaps, one queen in a hundred that may be able to get through zinc $\frac{1}{100}$ inch wide at the narrowest way of the perforation. Obviously, it would be folly to try to reduce the size any more than

this. If there is a larger percentage than one queen in a hundred that will go through a zinc of this size, we should like to have our readers furnish us the facts. But so far, as a general rule, the exceptions are so rare that the $\frac{1.65}{100}$ width works in a perfectly satisfactory way. Now, is it not possible that queens reared from large larvæ would be smaller than queens reared from smaller larvæ? and may not this one in a hundred be accounted for by the fact that they were partially developed as a *bee* before the bees decided they were to be *queens*?

Now, this matter of excluding queens is an interesting and important one, and we suggest that R. L. Taylor procure zinc of various sizes, and try various races of queens, and various queens of the same race—not forgetting, also, to try queens from the same mother, some queens reared from large larvæ, and some from small. Manufacturers can easily produce any size of perforation that will always exclude. It is exceedingly annoying to have queens go through the zinc; and if there is a possible way of making a sure thing of it, and yet not hinder the workers from passing through it, we want to know it. It is barely possible that Dr. Miller's bees, even when loaded, would go through zinc $\frac{1.65}{100}$ inch wide; and, on the other hand, we know almost positively that certain Carniolans could not get through it; and also some Italians that we have had—indeed, we think all of them. Let us hear from the brethren who have tried our latest zinc.

We clip the following from the *Farm and Fireside*:

WHAT THE RELIGION OF JESUS DOES.

- It gives a peace that the world can not take away.
- It makes men pay debts that the law can not collect.
- It makes women stop talking scandal.
- It makes children obey their parents.
- It makes men do good with their money.
- It makes those who have been vicious strive continually to control themselves.
- It makes the drunkard stop buying beefsteak for the saloon-keeper, and go to providing for his own family.
- It throws the jailer out of employment and raises the workman's wages.
- It builds hospitals and asylums, and furnishes the money to run them.
- It makes men unselfish and women more lovable.
- It throws a bright light into the valley of death, and shows that there is a city of eternal beauty just beyond it.

SPECIAL NOTICES.

GRAND RAPIDS LETTUCE SEED.

New crop right from Eugene Davis, the originator. Oz., 20c; pound, \$1.75.

EXTRA EARLY AMERICAN PEARL ONION-SETS.

Now is the time to put these out. We have a good supply at the prices given in our issue for Sept. 1.

We have made arrangements with the publishers of that magnificent magazine, the *Cosmopolitan*, whereby we can club that journal and GLEANINGS for two years for \$2.00 a year. Up till very recently the *Cosmopolitan* was \$3.00 a year. Send in your subscriptions at once. Old or new subscribers may take advantage of this offer.

RADISH SEED FOR SEPTEMBER SOWING.

Wood's Early Frame or Chinese Rose Winter, will, with ordinary fall weather, make nice radishes in the open air if sown at once. If you wish to prolong the crop, put them in beds so you can put on sash about the time severe freezing sets in. We can furnish a nice strain of either at 10 cts. per oz.; 75 cts. per lb. If wanted by mail, add the usual 9 cts. per lb. for postage and packing.

"WORLD'S FAIR" EXHIBIT.

Those of our readers, and others who may be attending the World's Fair during the coming six weeks, will find our exhibit in section 33, H, in the gallery of the Agricultural Building, near the honey exhibits of the various States and countries represented. Surmounting the exhibit is a fine water-color drawing, 25x40 inches, giving a very good idea of how we appear at the Home of the Honey-bees. In the glass case will be found a line of the goods we manufacture.

HONEY MARKET.

We have no change to report in the situation on honey, except that, in many localities, the amount secured does not seem to hold out to what was first expected. Prices are no better, and demand fair.

We quote choice extracted clover or basswood honey, in 60-lb. cans, at 9c per lb.; by the case of 2 cans; 8½c; two cases or more, 8c.

Choice white comb honey in 1-lb. sections, 24-lb. cases, 17c per lb.; in lots of 100 lbs. or more, 16c. In four-case lots or more we crate it so will ship safely by freight without having the combs broken down.

THE STONEWARE WATER-FILTER.

In order to save correspondence it may be well to say here that the price of the stoneware water-filter, figured on page 719, is, for the four sizes manufactured, respectively, \$2.00, \$3.75, \$5.00, and \$6.25. Address the Zanesville Stoneware Co., Zanesville, Ohio. Or if you are ordering goods of us, or if for any other reason you prefer to send here, you can do so. While we do not, as a rule, intend to advertise goods in our reading-columns, yet where any thing is so manifestly beneficial to the health of community we are pleased to give the manufacturers a lift by mentioning things which, in our judgment, merit a free advertisement.

REDUCTION IN THE PRICE OF EGYPTIAN OR WINTER ONION-SETS.

Until further notice the price will be 10 cts. per quart; 50 cts. per peck; \$1.75 per bushel. If wanted by mail, add 10 cts. per quart extra for postage. These can be planted any time this month or next; but the sooner the better. They will grow whether it rains or not. In fact, the Egyptian or winter onion is the most hardy and vigorous plant to take right hold and grow, under all circumstances and conditions, of any plant I ever saw, of any sort. After you once get them in the ground they will be there for evermore unless you plow or dig them up. You may cut off the tops, or let them grow up to weeds or any thing else you choose. They will keep on growing, splitting up and multiplying, and filling the ground; but, of course, they will make ever so much nicer bunch onions if you give them deep rich soil and lots of manure.

HONEY-PACKAGES FOR SHIPPING AND RETAILING.

On the second and third cover pages of this issue we print a couple of pages from our catalogue, of seasonable goods, to which we call your attention. The No. 25 jar is one of our leaders in glass packages for retailing, and it deserves to be. It is made of clear flint glass, and holds a pound without crowding; has a glass cover with rubber ring; and the screw rim, instead of being tin as we have heretofore represented it, we find to be nickel-plated on brass, or some metal that will not rust. This adds a decided advantage to this jar. The jam-jar screw-top pails and tumblers are all quite popular, and are not expensive, especially the latter. We have a good stock on hand to ship promptly.

There is nothing equal to the 60-lb. cans for shipping extracted honey. Many use kegs and barrels because the first cost is some less than cans. Our experience has been, that, after paying for the loss from leakage, they cost more than cans. Two cases of leakage have come to our notice the past week. One shipment of two barrels went a distance of two or three hundred miles without transfer, and a week on the way. When the barrels were delivered there was 152 pounds of choice honey gone from one barrel. In the other case the shipment did not go much farther; and in one barrel of 500 pounds, only 15 pounds was left. We know another man whose honey was leaking so badly during this very dry weather we have been having that he was compelled to get cans and empty the barrels into them.